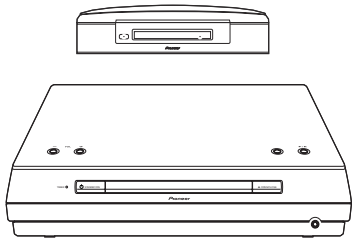
Pioneer sound.vision.soul

# Service Manual



XV-DV830

ORDER NO.
**RRV2817**

## DVD/CD TUNER

# XV-DV830

### THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

| Model | Type | Power Requirement | Regional restriction codes (Region No.) | Remarks |
|---|---|---|---|---|
| XV-DV830 | ZUCXJ | DC power supplied from other system component | 1 | |

**This product is a system(s) component.**
**This product does not function properly when independent ; to avoid malfunctions, be sure to connect it to the prescribed system component(s), otherwise damage may result. Please connect it to the POWERED SUBWOOFER S-DV830SW, for adjustment and operation inspection.**

| Component | System | Service Manual | Remarks |
|---|---|---|---|
| DVD/CD TUNER | XV-DV830 | RRV2817 | |
| SPEAKER SYSTEM | S-DV830 | RRV2807 | This manual |
| POWERED SUBWOOFER | S-DV830SW | | |
| SPEAKER SYSTEM | S-DV830ST | | |

For details, refer to "Important symbols for good services" .

**PIONEER CORPORATION** 4-1, Meguro 1-chome, Meguro-ku, Tokyo 153-8654, Japan
**PIONEER ELECTRONICS (USA) INC.** P.O. Box 1760, Long Beach, CA 90801-1760, U.S.A.
**PIONEER EUROPE NV** Haven 1087, Keetberglaan 1, 9120 Melsele, Belgium
**PIONEER ELECTRONICS ASIACENTRE PTE. LTD.** 253 Alexandra Road, #04-01, Singapore 159936
ⓒ**PIONEER CORPORATION 2003**

T-ZZV JULY 2003 printed in Japan

# SAFETY INFORMATION

**This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.**
**Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.**

WARNING

This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.

Health & Safety Code Section 25249.6 – Proposition 65

NOTICE

(FOR CANADIAN MODEL ONLY)

Fuse symbols (fast operating fuse) and/or (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE

(POUR MODÈLE CANADIEN SEULEMENT)

Les symboles de fusible (fusible de type rapide) et/ou (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

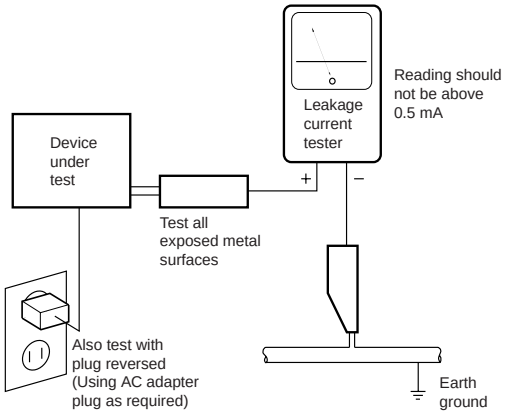
## (FOR USA MODEL ONLY)

### 1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

### LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60 Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5 mA.


Reading should not be above 0.5 mA
Leakage current tester
Device under test
+
–
Test all exposed metal surfaces
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

**ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.**

### 2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

**[ Important symbols for good services ]**
In this manual, the symbols shown-below indicate that adjustments, settings or cleaning should be made securely.
When you find the procedures bearing any of the symbols, be sure to fulfill them:

1. Product safety

You should conform to the regulations governing the product (safety, radio and noise, and other regulations), and should keep the safety during servicing by following the safety instructions described in this manual.

2. Adjustments

To keep the original performances of the product, optimum adjustments or specification confirmation is indispensable. In accordance with the procedures or instructions described in this manual, adjustments should be performed.

3. Cleaning

For optical pickups, tape-deck heads, lenses and mirrors used in projection monitors, and other parts requiring cleaning, proper cleaning should be performed to restore their performances.

4. Shipping mode and shipping screws

To protect the product from damages or failures that may be caused during transit, the shipping mode should be set or the shipping screws should be installed before shipping out in accordance with this manual, if necessary.

5. Lubricants, glues, and replacement parts

Appropriately applying grease or glue can maintain the product performances. But improper lubrication or applying glue may lead to failures or troubles in the product. By following the instructions in this manual, be sure to apply the prescribed grease or glue to proper portions by the appropriate amount.For replacement parts or tools, the prescribed ones should be used.

*** When the FFC cable between the VIDEO ASSY-CN8301 and DVDM ASSY-CN 943 is off from the connector and then the power is turned on, the parts below on the DVDM ASSY may be destroyed.**
**Be sure to take care when diagnosing the ASSYS. Refer to P.106.**

| | |
|---|---|
| IC851 | DSD1791DBR (AUDIO DAC) |
| IC861, IC871 | DSD1702EG (AUDIO DAC) |

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# 1. SPECIFICATIONS

### Amplifier Section

Continuous Power (RMS). . . . . 75 W / channel
. . . . . (1 kHz, THD 10%, 6Ω)

### Disc section

Digital audio
characteristics . . . . . DVD fs: 96 kHz, 24-bit
Type. . . . . DVD system, Video CD system and
Compact Disc digital audio system
Frequency response
48 kHz sampling. . . . . 4 Hz – 22 kHz
96 kHz sampling. . . . . 4 Hz – 44 kHz
192 kHz sampling. . . . . 4 Hz – 88 kHz
S/N ratio . . . . . 108dB
Dynamic range . . . . . 95dB
Total harmonic distortion . . . . . 0.005 %
Wow and Flutter. . . . . Limit of measurement
(±0.001 % W.PEAK) or less (JEITA)

### FM tuner section

Frequency Range . . . . . 87.5 - 108MHz
Antenna . . . . . 75Ω, unbalanced

### AM tuner section

Frequency Range
With 9kHz step . . . . . 531 kHz to 1,602 kHz
With 10kHz step . . . . . 530 kHz to 1,700 kHz
Antenna . . . . . Loop antenna

### Miscellaneous

Power Requirements . . . . . AC 120V, 60 Hz
Power Consumption . . . . . 178 W
Power Consumption
in standby mode . . . . . 0.48 W
Dimensions:
DVD/CD Tuner. . 360 (W) x 74 (H) x 270 (D) mm
$14\ 3/16$ (W) x $2\ 29/32$ (H) x $10\ 5/8$ (D) in.
Display Unit . . . . 274 (W) x 44 (H) x 35 (D) mm
$10\ 25/32$ (W) x $1\ 23/32$ (H) x $1\ 3/8$ (D) in.
Weight:
DVD/CD Tuner. . . . . 3.2 kg / 7 lb
Display Unit . . . . . 0.2 kg / 7 oz

### Accessories

Operating Instructions . . . . . 1
Setup guide. . . . . 1
Display unit . . . . . 1
Remote control unit . . . . . 1
Power cord . . . . . 1
Video Cord (yellow plugs). . . . . 1
Display cable (gray plugs). . . . . 1
Control cable A (blue plugs) . . . . . 1
Control cable B (black plugs) . . . . . 1
FM antenna . . . . . 1
AM loop antenna . . . . . 1
Dry cell batteries (AA/R6) . . . . . 2
Speaker cords (5 m). . . . . 3
Speaker cords (10 m). . . . . 2
Non-skid pads (center speaker). . . . . 3
Non-skid pads (subwoofer). . . . . 4
Speaker stands. . . . . 4
Warranty Card. . . . . 1

### Satellite Speaker System (S-DV830ST)

Type Sealed, antimagnetic
Speaker . . . . . 8.7 cm (cone type)
. . . . . 5.2 cm (cone type)
Nominal impedence. . . . . 6Ω
Frequency range. . . . . 80 – 20,000 Hz
Max. input . . . . . 75 W (JEITA)
Front / Surround speakers
Dimensions . . . . . 110 (W) x 59 (D) x 284 (H) cm
$4^{11/32}$ (W) x $2\ 5/16$ (H) x $10^{3/16}$ (D) in.
Weight . . . . . 0.7 kg
Center speaker
Dimensions . . . . . 284 (W) x 58 (D) x 110 (H) cm
$11^{3/16}$ (W) x $2\ 9/32$ (H) x $11^{3/16}$ (D) in.
Weight . . . . . 0.7 kg /1 lb. 9 oz

### Powered subwoofer (S-DV830SW)

Type. . . . . Bass reflex floor type, antimagnetic
Speaker . . . . . 18 cm (cone type)
Nominal impedence. . . . . 6Ω
Frequency range. . . . . 28 – 250 Hz
Max. input . . . . . 75 W (JEITA)
Dimensions . . . . 192 (W) x 436 (D) x 395 (H) cm
$7\ 9/16$ (W) x $17\ 5/32$ (H) x $15^{9/16}$ (D) in.
Weight . . . . . 12.5 kg / 27 lb. 9 0z

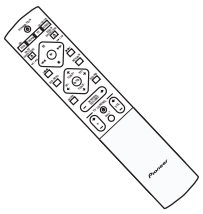
**Note**

- Specifications and design subject to possible modification without notice, due to improvements.

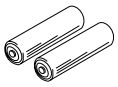
This product includes FontAvenue® fonts licenced by NEC corporation. FontAvenue is a registered trademark of NEC Corporation.

# accessories

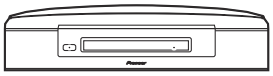
Remote control unit (XXD3058)



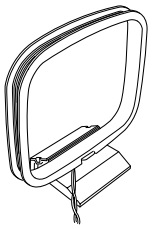
Dry cell batteries (sizeAA/R6P) x2



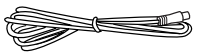
Display unit (AXX7163)



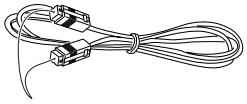
AM loop antenna (ATB7009)



FM antenna (ADH7004)



Control cable A (ADE7063) L=3m

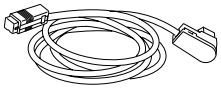


Blue plugs

Control cable B (ADE7078) L=3m

Black plugs

Display cable (ADE7077) L=1.5m

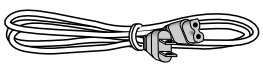


Gray plugs

Video cord (VDE1065)

Yellow plugs

- Power cord (ADG7021)



A

B

C

D

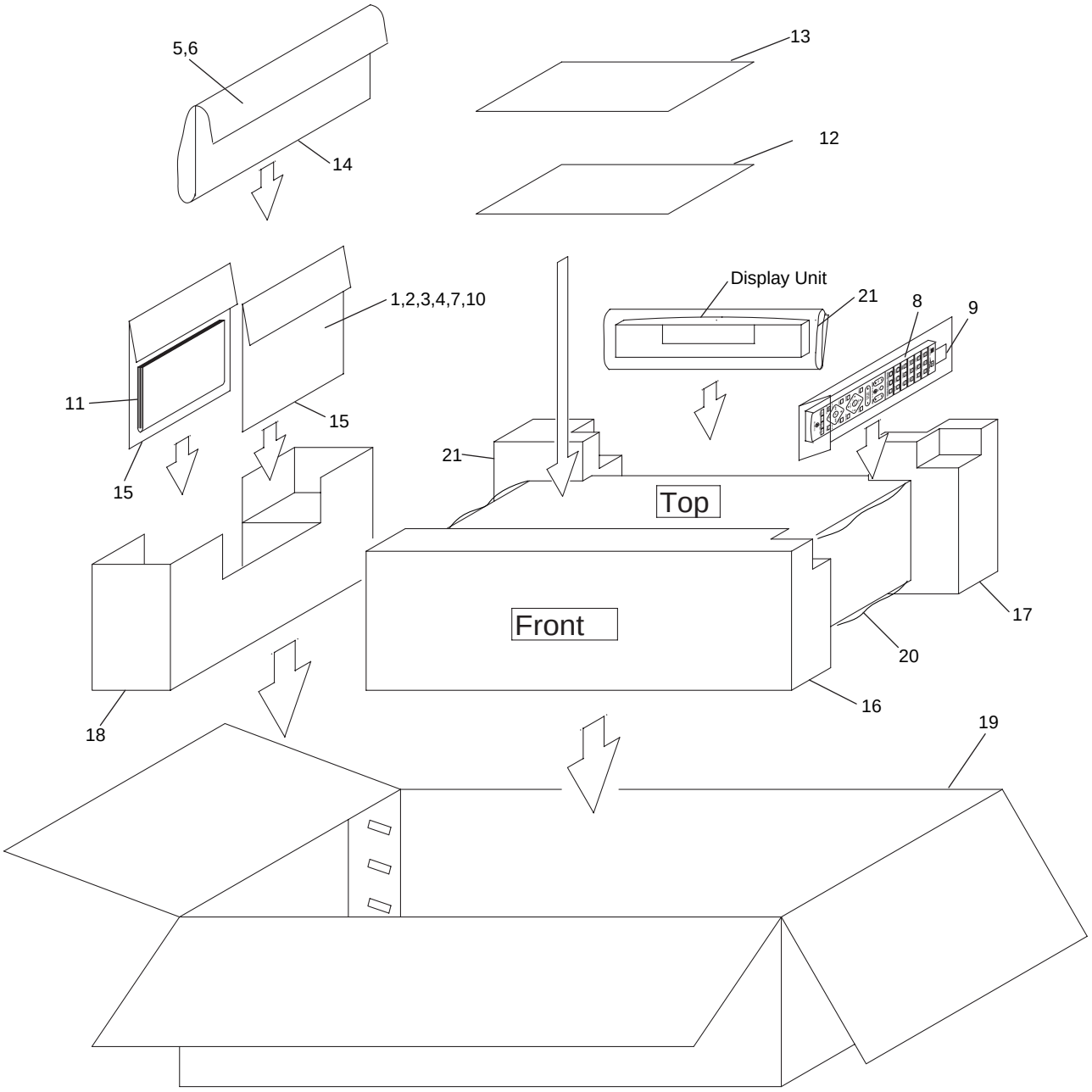
E

F

# 2. EXPLODED VIEWS AND PARTS LIST

*NOTES:*
- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Screws adjacent to ▼ mark on product are used for disassembly.*
- *For the applying amount of lubricants or glue, follow the instructions in this manual. (In the case of no amount instructions, apply as you think it appropriate.)*

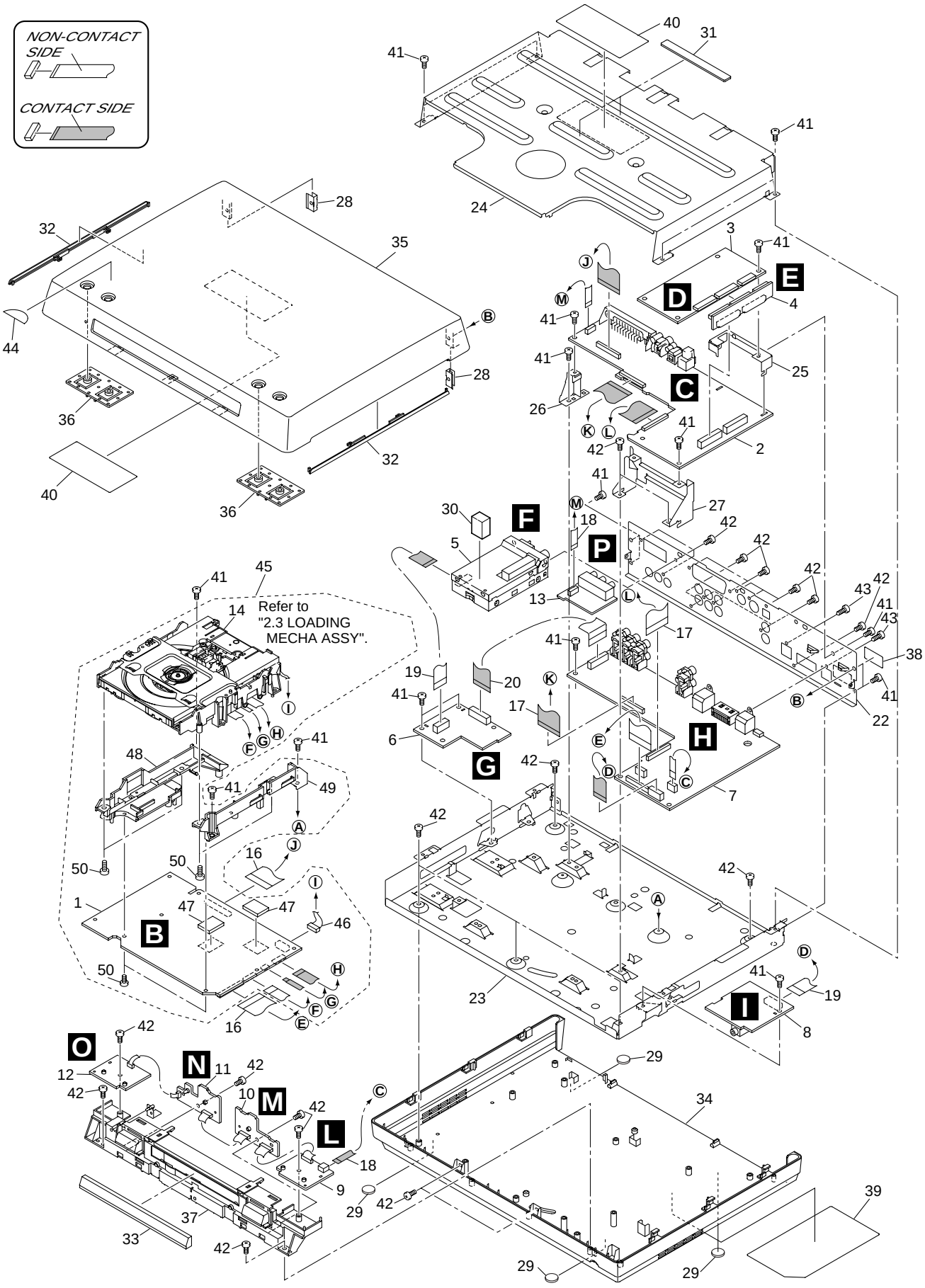
## 2.1 PACKING



## PACKING parts List

| Mark | No. | Description | Part No. |
|---|---|---|---|
| ⚠ | 1 | Power Cord | ADG7021 |
| | 2 | FM Antenna | ADH7004 |
| | 3 | AM Loop Antenna | ATB7009 |
| | 4 | Video Cord | VDE1065 |
| | 5 | Control Cable A (Blue Pugs) | ADE7063 |
| | 6 | Control Cable B (Black Plugs) | ADE7078 |
| | 7 | Display Cable (Gray Plugs) | ADE7077 |
| | 8 | Remote Control Unit | XXD3058 |
| | 9 | Battery Cover | XZN3130 |
| NSP | 10 | Dry Cell Batteries (R6P,AA) | VEM1031 |
| | 11 | Operating Instructions (English, French) | ARE7335 |
| | 12 | Setup Guide (English, French) | ARE7337 |
| NSP | 13 | Warranty Card | ARY7045 |
| NSP | 14 | Polyethylene Bag | AHG7098 |
| NSP | 15 | Polyethylene Bag | Z21-038 |
| | 16 | Front Pad | AHA7420 |
| | 17 | Rear Pad | AHA7421 |
| | 18 | Spacer | AHB7087 |
| | 19 | Packing Case | AHD8224 |
| | 20 | Packing Sheet | AHG7015 |
| | 21 | Protection Bag | AHG7109 |

## 2.2 EXTERIOR SECTION



## EXTERIOR SECTION parts List

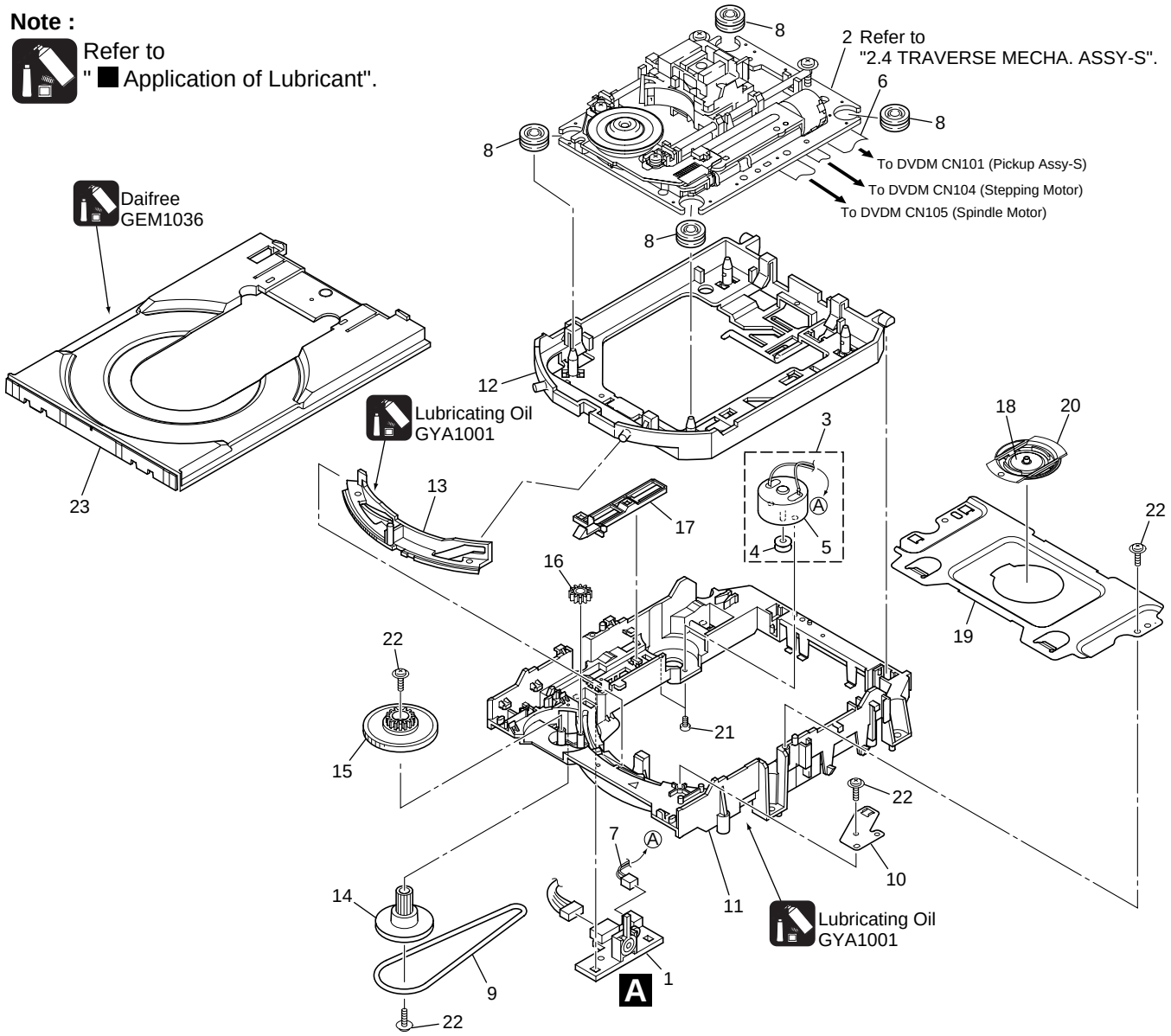
| Mark | No. | Description | Part No. |
|---|---|---|---|
| | 1 | DVDM Assy | AWM7813 |
| | 2 | VIDEO Assy | AWU8104 |
| | 3 | DSP Assy | AWX8325 |
| | 4 | DSP TRADE Assy | AWU8101 |
| | 5 | FM/AM TUNER Module | AXQ7228 |
| | 6 | TX TRADE Assy | AWU8115 |
| | 7 | CONTROL Assy | AWU8103 |
| | 8 | HP Assy | AWU8102 |
| | 9 | KEY R TOP Assy | AWU8113 |
| | 10 | KEY R Assy | AWU8112 |
| | 11 | KEY L Assy | AWU8110 |
| | 12 | KEY L TOP Assy | AWU8111 |
| | 13 | COMPONENT Assy | AWU8116 |
| NSP | 14 | LOADING MECHA Assy | VWT1208 |
| | 15 | • • • • • • | |
| | 16 | 30P FFC/30V | ADD7436 |
| | 17 | 30P FFC/30V | ADD7437 |
| | 18 | 5P FFC/30V | ADD7438 |
| | 19 | 13P FFC/30V | ADD7439 |
| | 20 | 19P FFC/30V | ADD7440 |
| | 21 | • • • • • • | |
| | 22 | Rear Panel | ANC8211 |
| NSP | 23 | Bottom Plate | ANF7035 |
| NSP | 24 | Top Plate | ANF7036 |
| | 25 | Angle DSP | ANG7467 |
| | 26 | Angle PCB S | ANG7468 |
| | 27 | Angle PCB M | ANG7475 |
| | 28 | Screw Plate | ANG7470 |
| | 29 | Leg | AEB7090 |
| | 30 | Tuner Spacer | AEB7320 |
| | 31 | Top Spacer | AEB7321 |
| | 32 | Side Plate | AAK8135 |
| | 33 | Tray Panel | AAN7223 |
| | 34 | Bottom Base ZUC | AMA7030 |
| | 35 | Top Panel | AMB7850 |
| | 36 | Button Assy T | AXG7205 |
| | 37 | Button Assy F | AXG7206 |
| NSP | 38 | ID Label Assy | VXW1003 |
| NSP | 39 | Name Label R | AAL7338 |
| | 40 | 65 Label | ARW7050 |
| | 41 | Screw | BBZ30P080FMC |
| | 42 | Screw | BPZ30P080FZK |
| | 43 | Screw | PSC30P080FNI |
| NSP | 44 | Energy Star Label | AAX7876 |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| NSP | 45 | DVD Assy | AXA7126 |
| | 46 | Connector Assy | PG05KK-E25 |
| | 47 | Cushion | AEB7267 |
| | 48 | Adapter02 L | ANW7267 |
| | 49 | Adapter02 R | ANW7268 |
| | 50 | Screw | BPZ30P080FMC |

# 2.3 LOADING MECHA ASSY

**Note :**

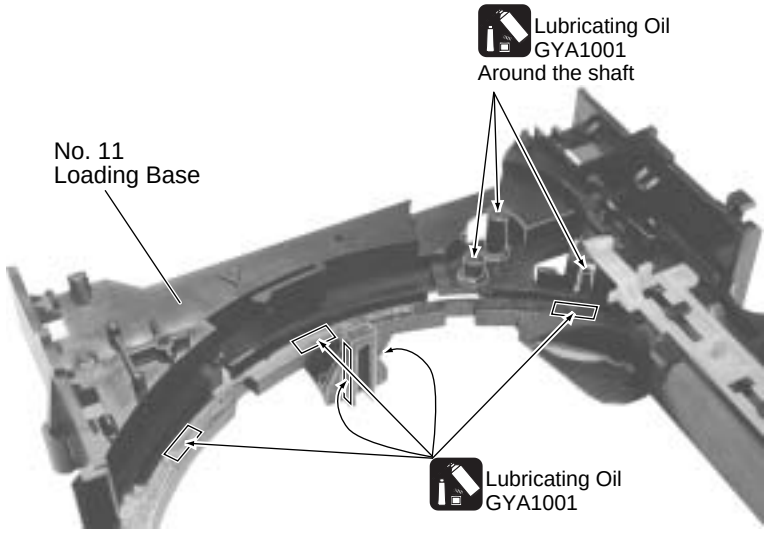
Refer to
" ■ Application of Lubricant".

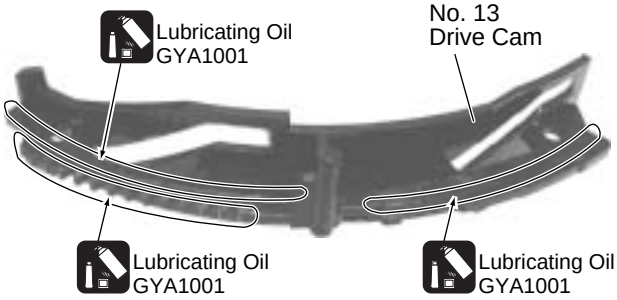



## LOADING MECHA ASSY parts List

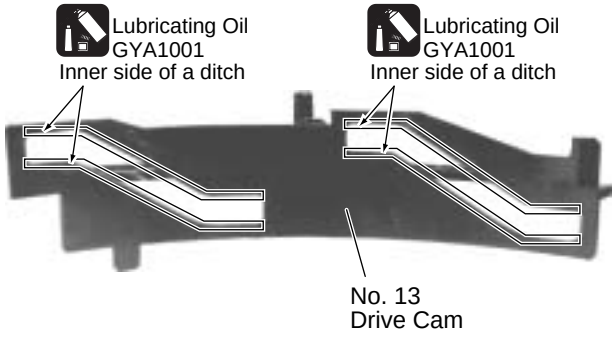
| Mark | No. | Description | Part No. |
|---|---|---|---|
| NSP | 1 | LOAB Assy | VWG2346 |
| | 2 | Traverse Mechanism Assy-S | VXX2871 |
| | 3 | Loading Motor Assy | VXX2872 |
| | 4 | Motor Pulley | PNW1634 |
| | 5 | Motor | VXM1105 |
| | 6 | Flexible Cable (24P) | VDA1947 |
| | 7 | Connector Assy 2P | VKP2253 |
| | 8 | Floating Rubber | VEB1351 |
| | 9 | Belt | VEB1330 |
| | 10 | Stabilizer | VNE2253 |
| | 11 | Loading Base | VNL1917 |
| | 12 | Float Base DVD | VNL1918 |
| | 13 | Drive Cam | VNL1919 |
| | 14 | Gear Pulley | VNL1921 |
| | 15 | Loading Gear | VNL1922 |
| | 16 | Drive Gear | VNL1923 |
| | 17 | SW Lever | VNL1925 |
| | 18 | Clamper Plate | VNE2251 |
| | 19 | Bridge | VNE2252 |
| | 20 | Clamper | VNL1924 |
| | 21 | Screw | JGZ17P028FMC |
| | 22 | Screw | Z39-019 |
| | 23 | Tray | VNL1920 |

## Application of Lubricant

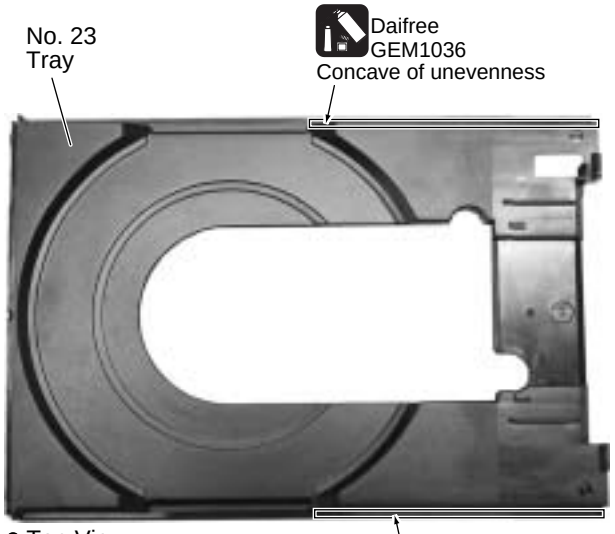


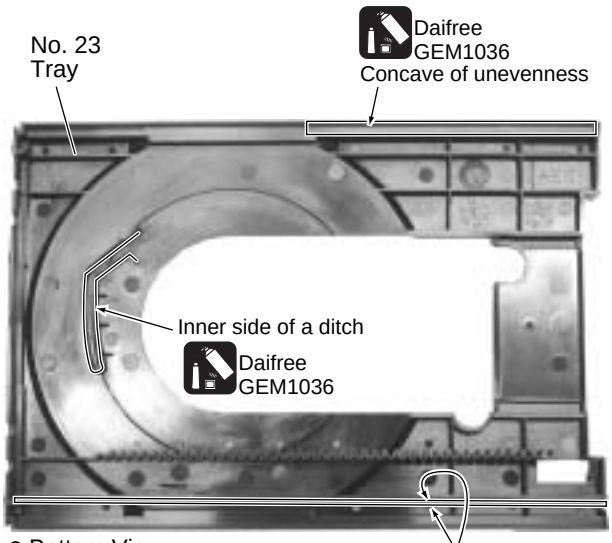

● Front View




● Rear View

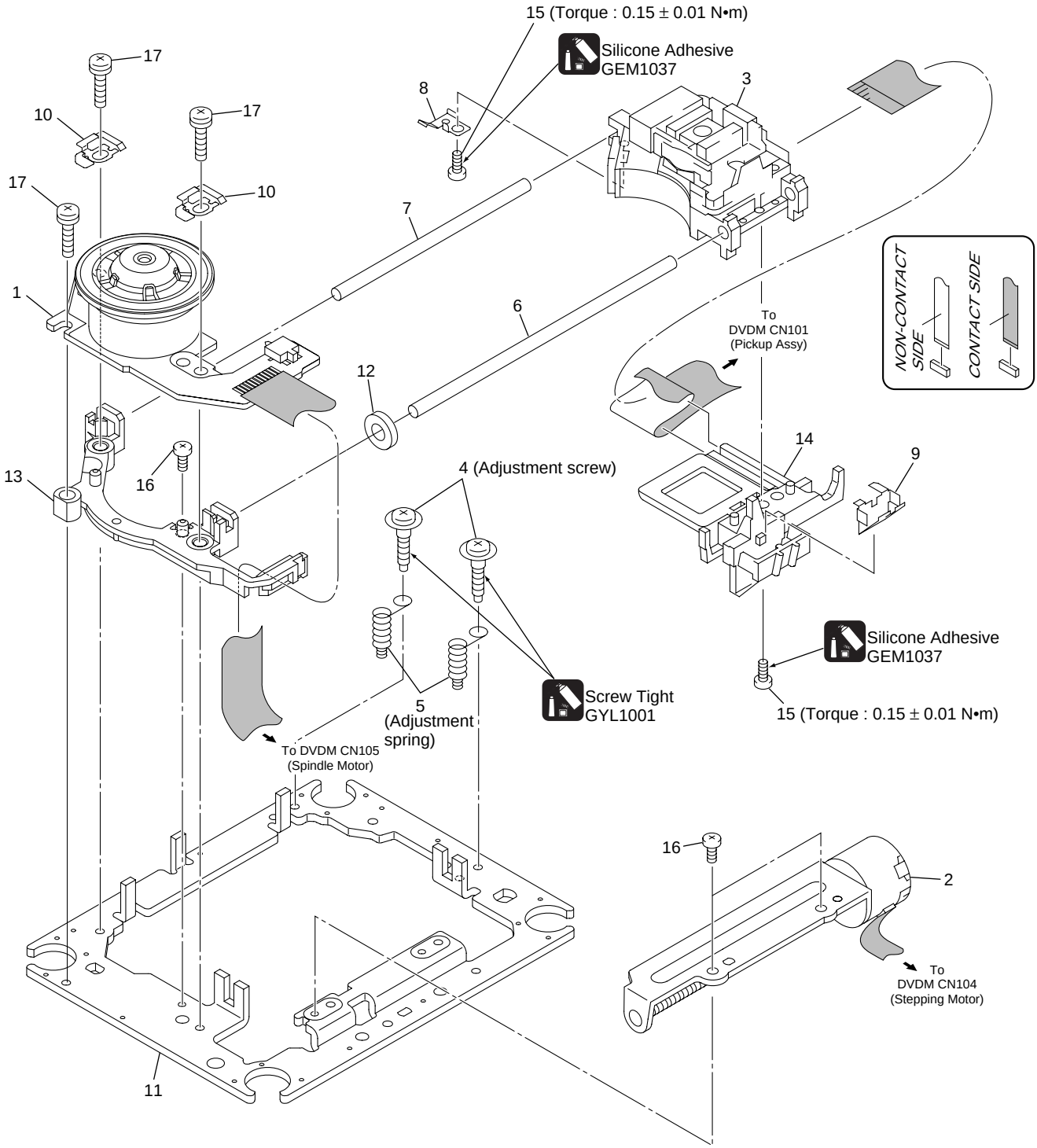



● Top View




● Bottom View

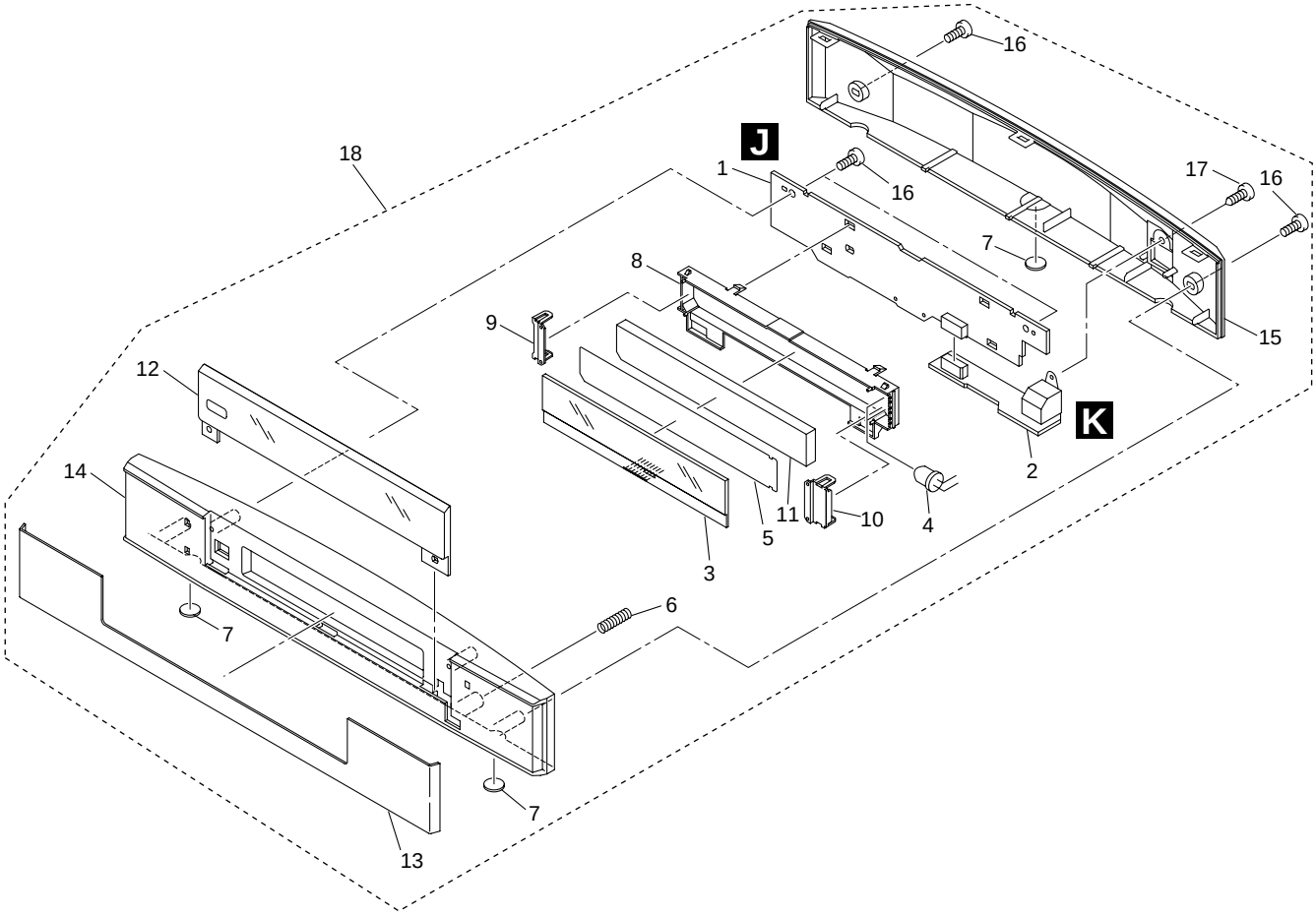
# 2.4 TRAVERSE MECHA ASSY-S




## TRAVERSE MECHA ASSY-S parts List

| Mark | No. | Description | Part No. |
|---|---|---|---|
| | 1 | Spindle Motor | VXM1099 |
| | 2 | Stepping Motor | VXM1101 |
| ⚠ | 3 | Pickup Assy-S | OXX8005 |
| | 4 | Skew Screw | VBA1080 |
| | 5 | Skew Spring | VBH1335 |
| | 6 | Guide Bar | VLL1514 |
| | 7 | Sub Guide Bar | VLL1515 |
| | 8 | Leaf Spring | VNC1023 |
| | 9 | Joint Spring | VNC1019 |
| | 10 | Support Spring | VNC1020 |
| NSP | 11 | Mechanism Chassis | VNE2248 |
| | 12 | Damper Sheet | VEB1335 |
| | 13 | Spacer | VNL1913 |
| | 14 | Joint 03 | VNL1949 |
| | 15 | Tapping Screw | OBA8021 |
| | 16 | Screw | BBZ20P050FZK |
| | 17 | Screw | PMA26P100FMC |

## 2.5 DISPLAY UNIT

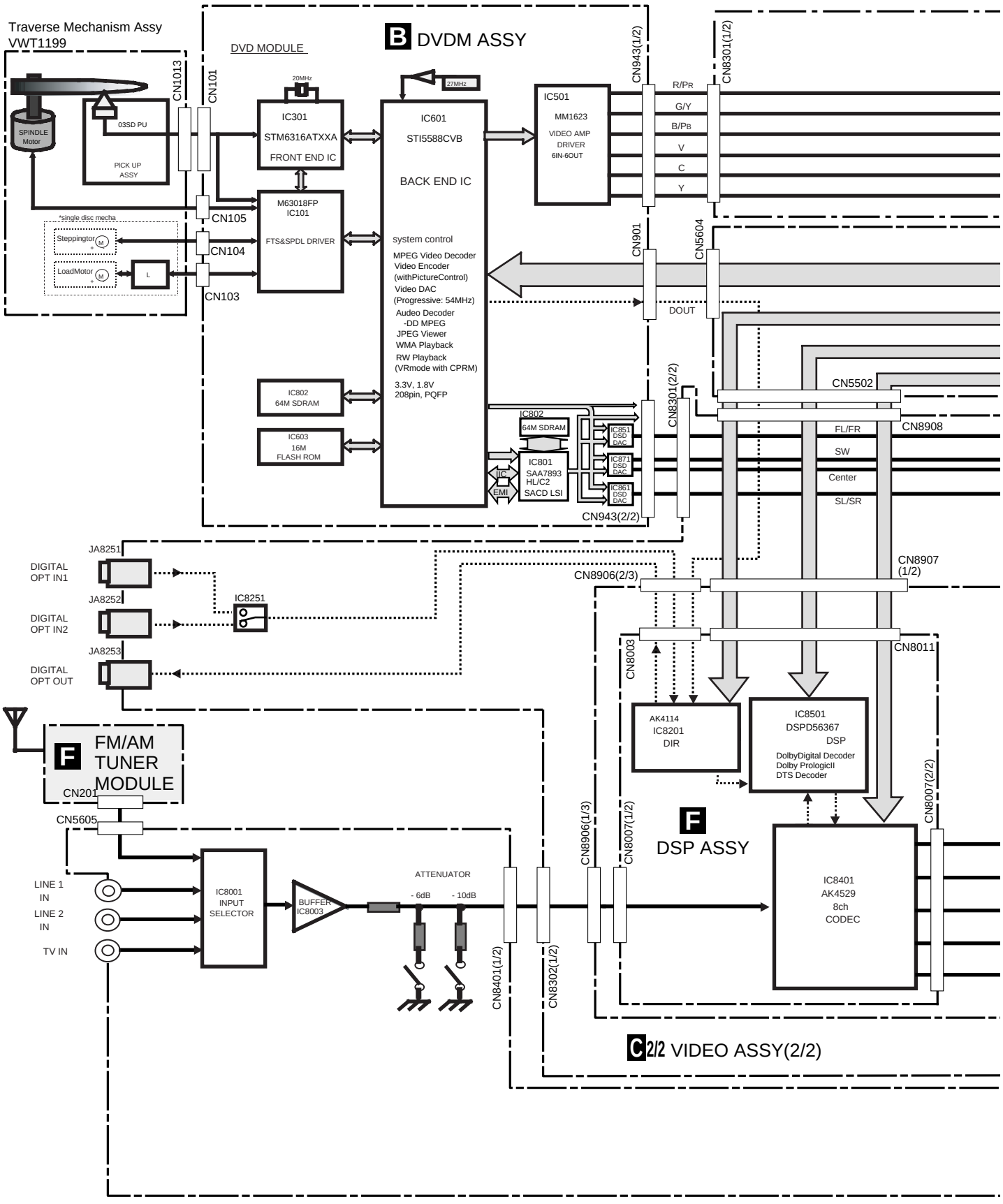


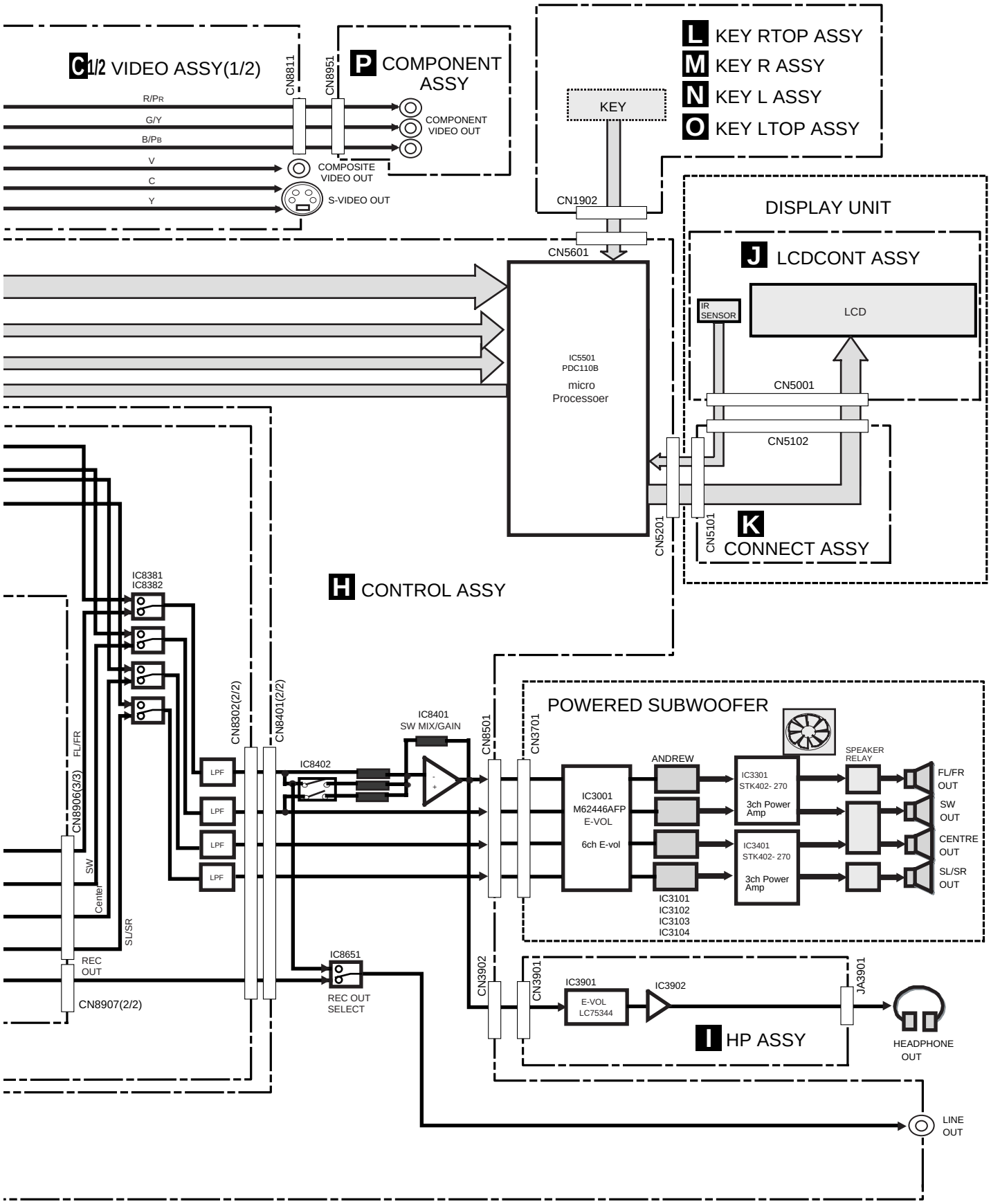

### DISPLAY UNIT parts List

| Mark | No. | Description | Part No. |
|---|---|---|---|
| | 1 | LCD CONT Assy | AWU8119 |
| | 2 | CONNECT Assy | AWU8118 |
| | 3 | LCD | AAV7098 |
| | 4 | LED (White) | NSPW510BS-1064 |
| | 5 | Diffusion Sheet | AAK8144 |
| | 6 | Earth Spring | ABH7233 |
| | 7 | Leg | AEB7090 |
| | 8 | Back Light Case | AMR7463 |
| | 9 | REF Plate A | AMR7464 |
| | 10 | REF Plate B | AMR7465 |
| | 11 | Optical Plate | AMR7466 |
| | 12 | Display Window | AAK8137 |
| | 13 | Display AL | AAP7094 |
| | 14 | Display Panel | AMB7851 |
| | 15 | Display Cover | AMC7051 |
| | 16 | Screw | BPZ30P080FZK |
| | 17 | Screw | PSC30P080FNI |
| | 18 | Display Unit | AXX7163 |

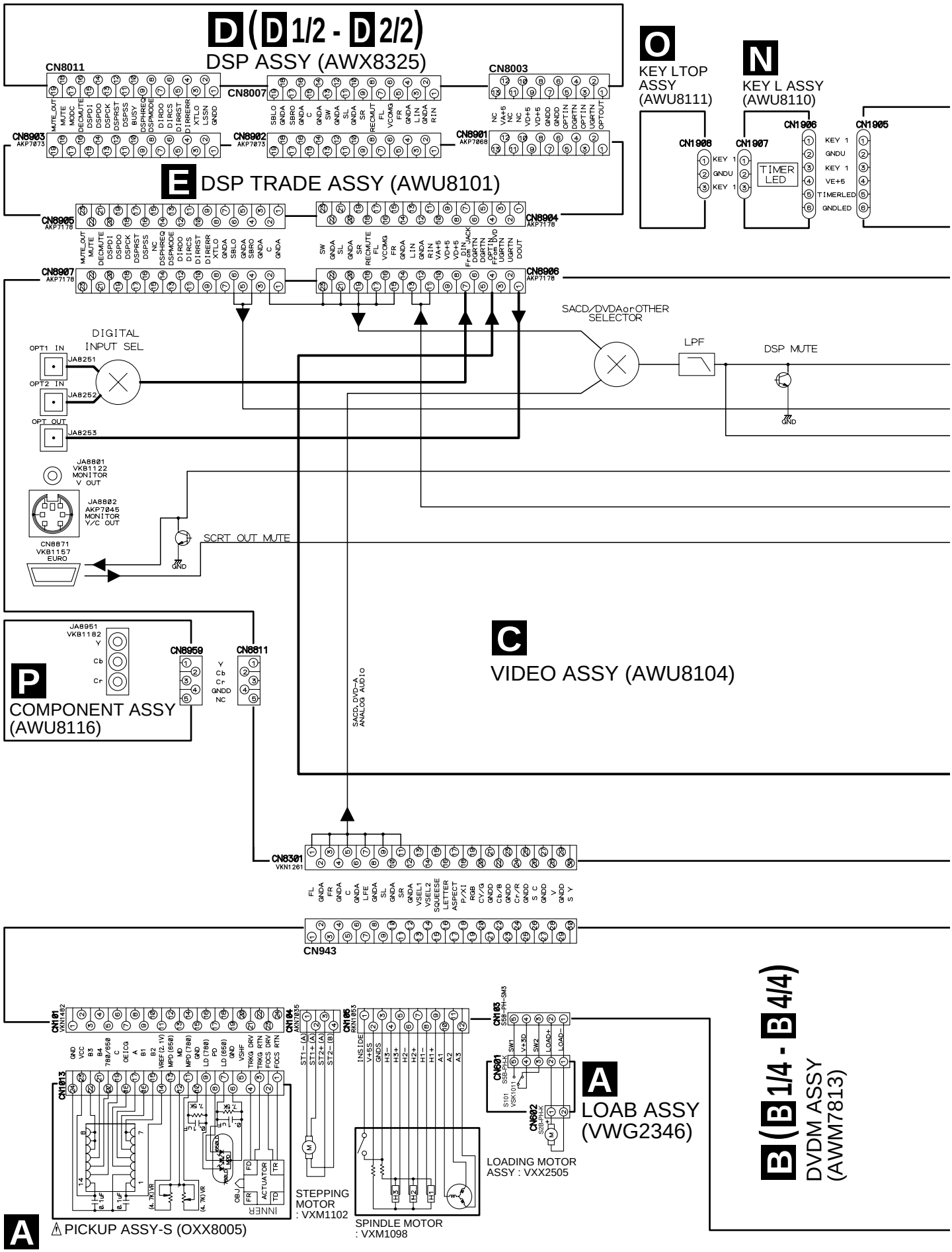
# 3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

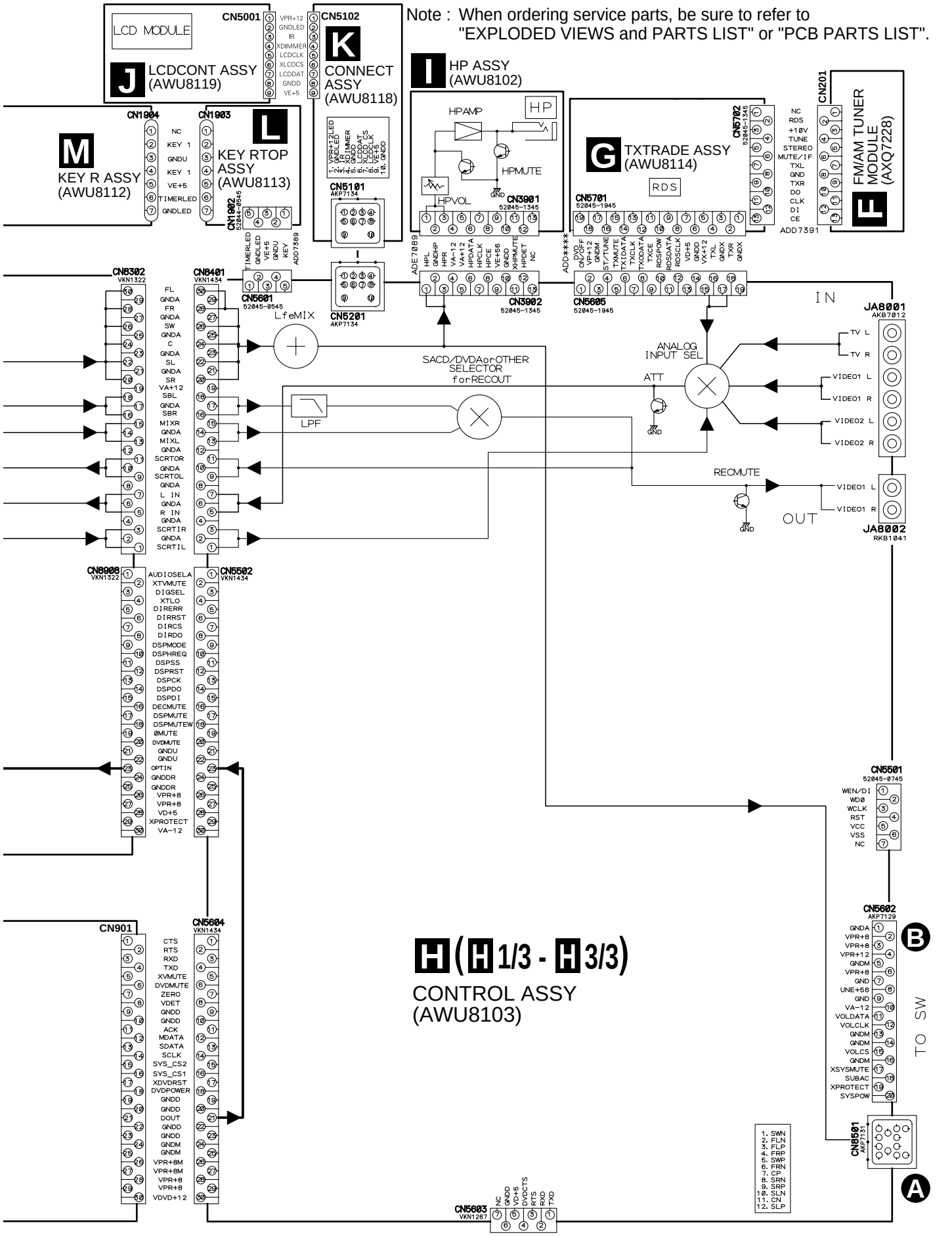
## 3.1 BLOCK DIAGRAM




C 1/2 VIDEO ASSY(1/2)
CN8811
CN8951
P COMPONENT ASSY
R/PR
G/Y
B/PB
V
C
Y
COMPONENT VIDEO OUT
COMPOSITE VIDEO OUT
S-VIDEO OUT
L KEY RTOP ASSY
M KEY R ASSY
N KEY L ASSY
O KEY LTOP ASSY
KEY
CN1902
DISPLAY UNIT
J LCDCONT ASSY
IR SENSOR
LCD
CN5001
CN5102
CN5601
IC5501
PDC110B
micro Processoer
CN5201
CN5101
K CONNECT ASSY
H CONTROL ASSY
IC8381
IC8382
FL/FR
CN8906(3/3)
SW
Center
SL/SR
REC OUT
CN8907(2/2)
CN8302(2/2)
CN8401(2/2)
LPF
IC8402
IC8401
SW MIX/GAIN
CN8501
CN3701
POWERED SUBWOOFER
IC3001
M62446AFP
E-VOL
6ch E-vol
ANDREW
IC3301
STK402- 270
3ch Power Amp
IC3401
STK402- 270
3ch Power Amp
SPEAKER RELAY
FL/FR OUT
SW OUT
CENTRE OUT
SL/SR OUT
IC3101
IC3102
IC3103
IC3104
IC8651
REC OUT SELECT
CN3902
CN3901
IC3901
E-VOL
LC75344
IC3902
JA3901
I HP ASSY
HEADPHONE OUT
LINE OUT

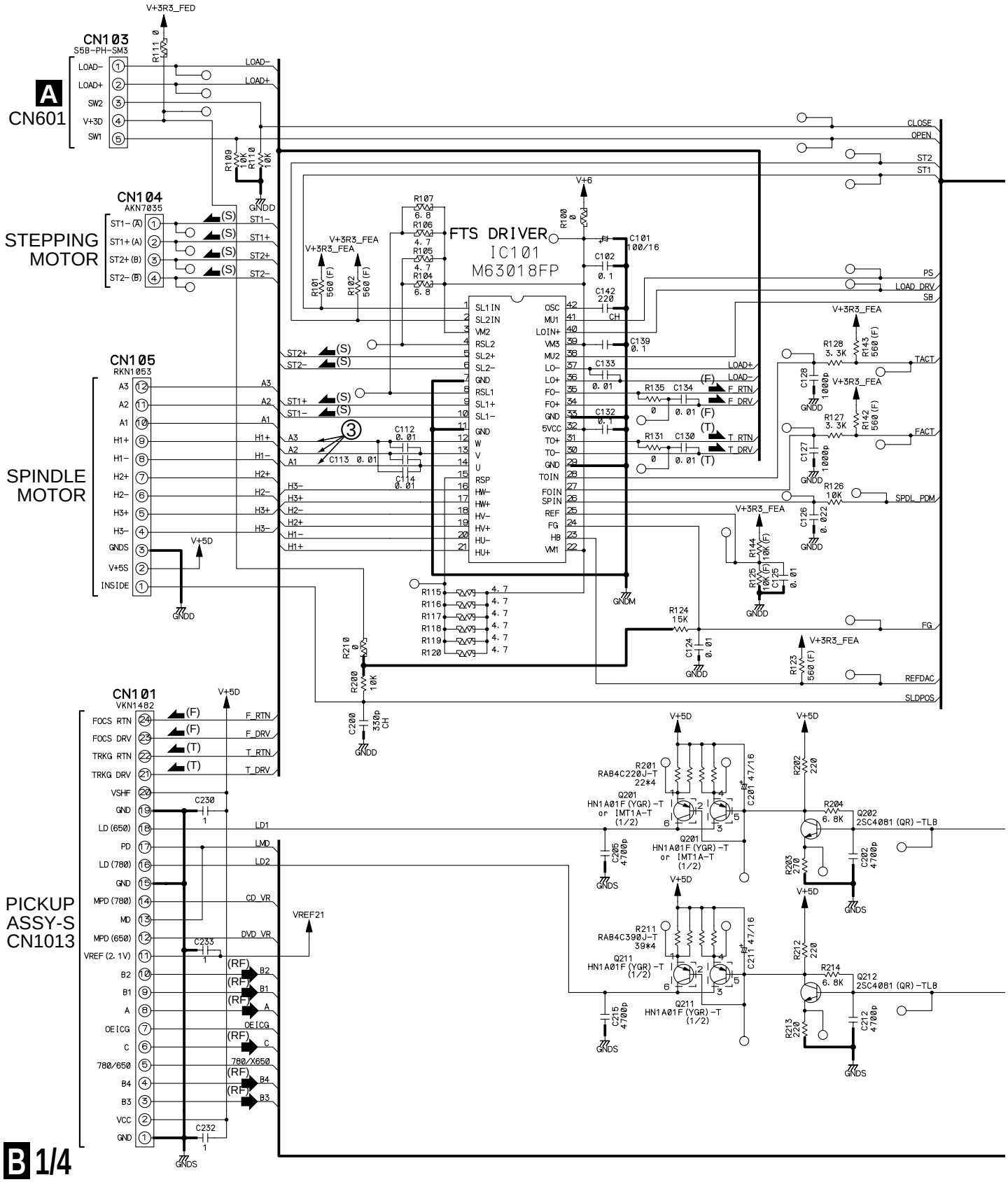
## 3.2 LOAB ASSY and OVERALL WIRING DIAGRAM



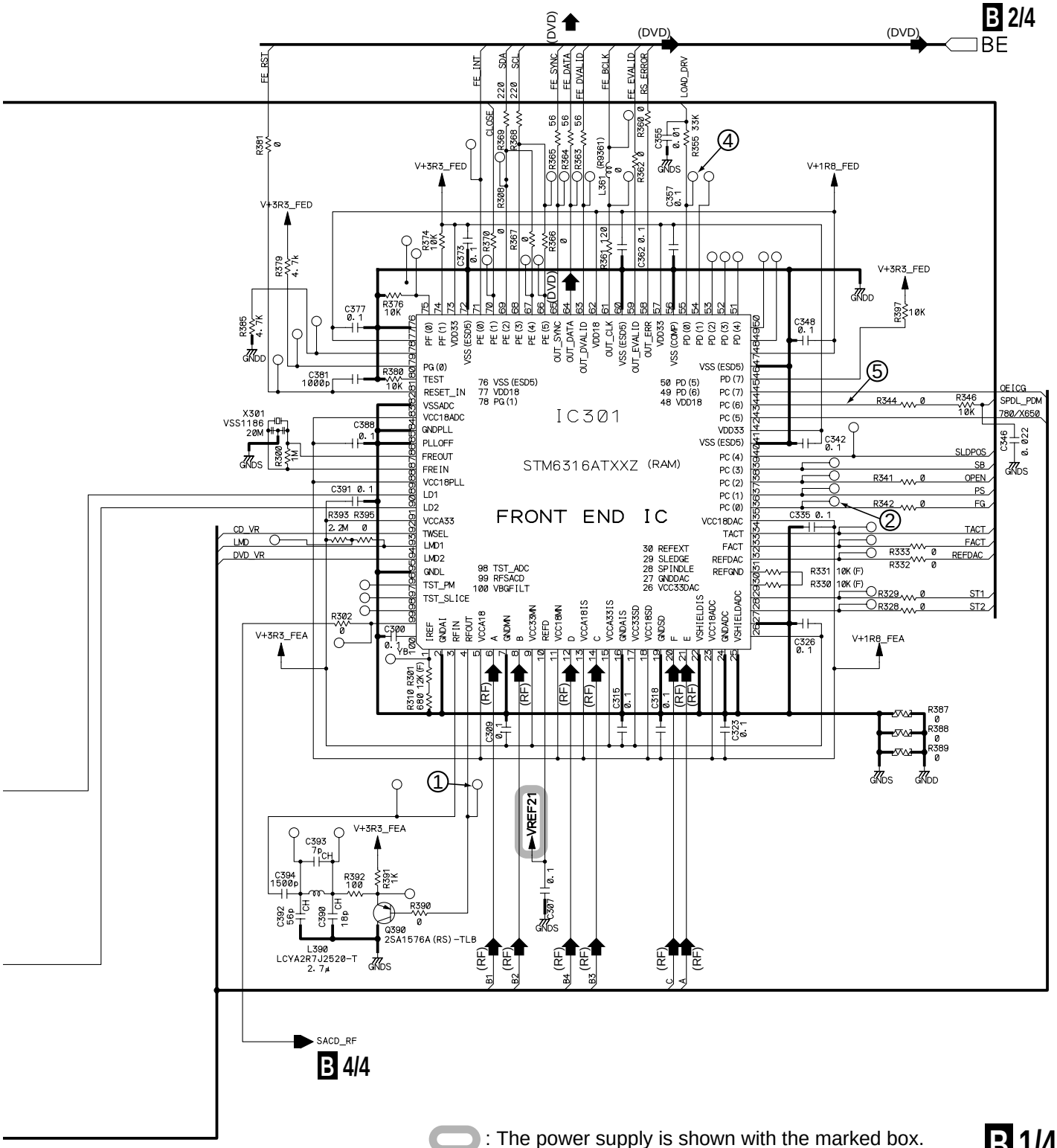

Note : When ordering service parts, be sure to refer to "EXPLODED VIEWS and PARTS LIST" or "PCB PARTS LIST".
LCD MODULE
J LCDCONT ASSY (AWU8119)
CN5001
K CONNECT ASSY (AWU8118)
CN5102
I HP ASSY (AWU8102)
HPAMP
HP
HPMUTE
HPVOL
CN3901
M KEY R ASSY (AWU8112)
CN1904
L KEY RTOP ASSY (AWU8113)
CN1903
CN1902
CN5101
AKP7134
G TXTRADE ASSY (AWU8114)
RDS
CN5702
CN5701
CN201
F FM/AM TUNER MODULE (AXQ7228)
ADD7391
CN6302
VKN1322
CN6401
VKN1434
CN5601
52045-0545
LfeMIX
CN5201
AKP7134
CN3902
52045-1345
CN5605
52045-1945
SACD/DVDAorOTHER SELECTOR forRECOUT
LPF
ANALOG INPUT SEL
ATT
IN
JA8001
AKB7012
TV L
TV R
VIDEO1 L
VIDEO1 R
VIDEO2 L
VIDEO2 R
RECMUTE
OUT
JA8002
RKB1041
CN8908
VKN1322
CN5502
VKN1434
CN5501
52045-0745
CN5602
AKP7129
TO SW
CN901
CN5604
VKN1434
H (H 1/3 - H 3/3)
CONTROL ASSY (AWU8103)
CN8501
AKP7131
CN5603
VKN1267

## 3.3 DVDM ASSY(1/4)

**B 1/4** DVDM ASSY (AWM7813)

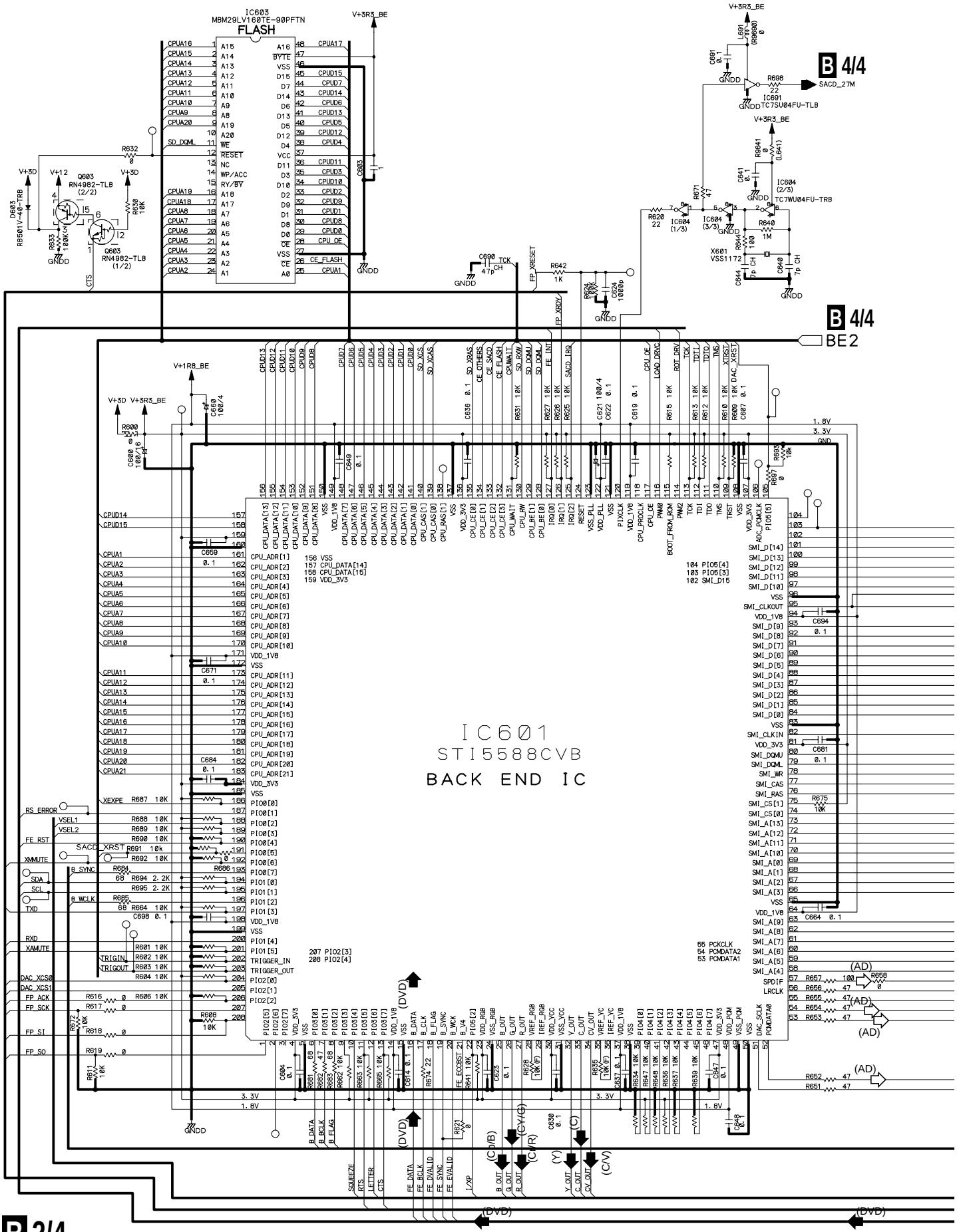


(RF): RF SIGNAL ROUTE
(DVD): DVD DATA SIGNAL ROUTE
(F): FOCUS SERVO LOOP LINE
(T): TRACKING SERVO LOOP LINE
(S): STEPPING SERVO LOOP LINE



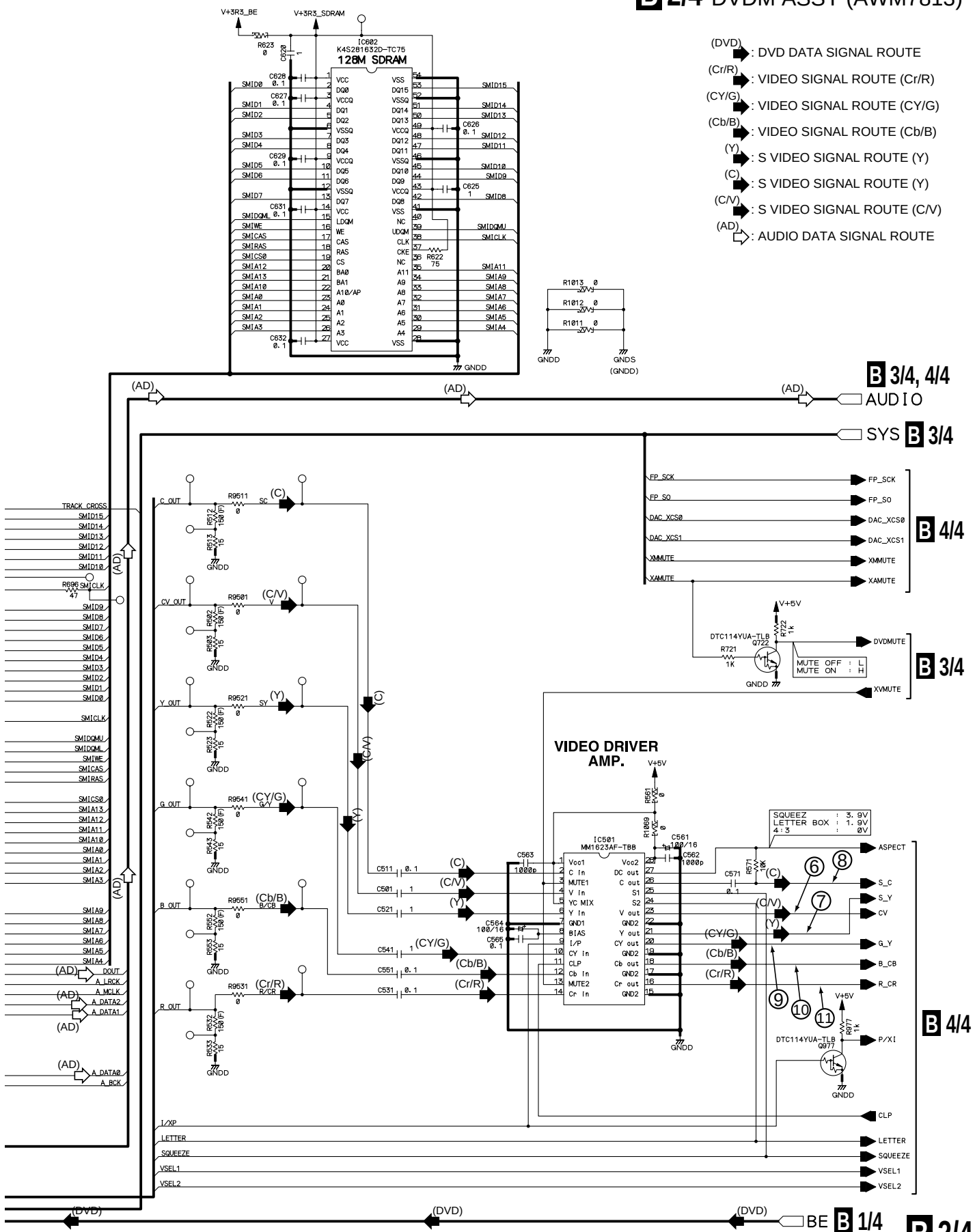

: The power supply is shown with the marked box.

# 3.4 DVDM ASSY(2/4)

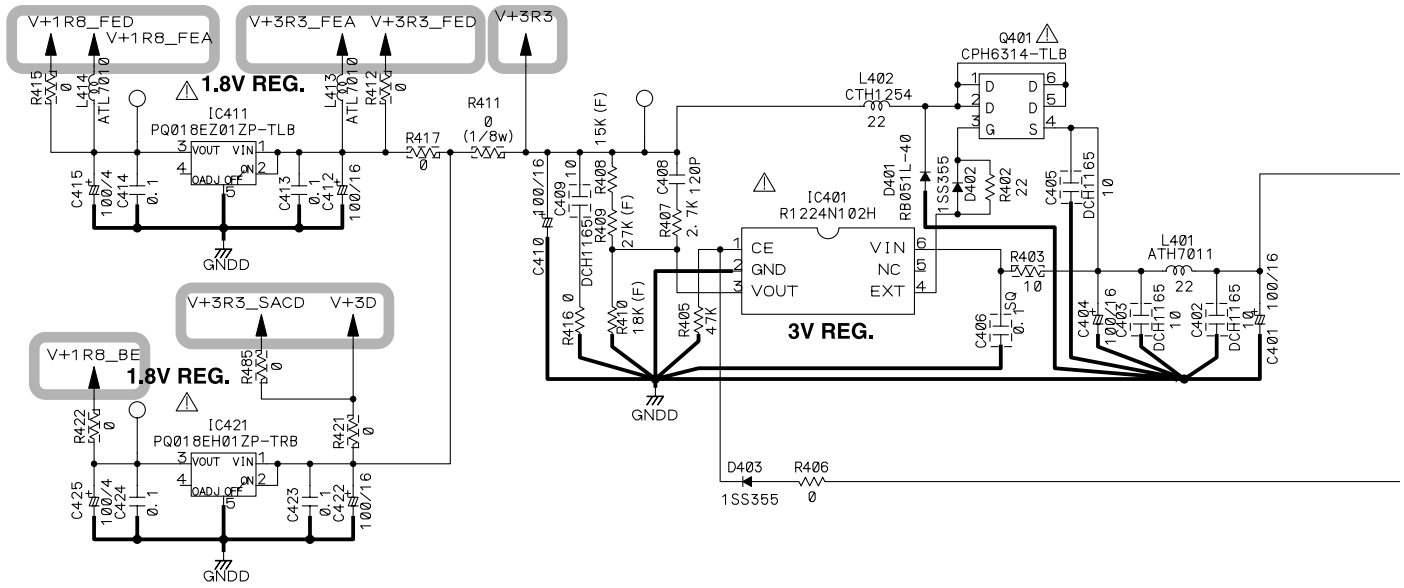


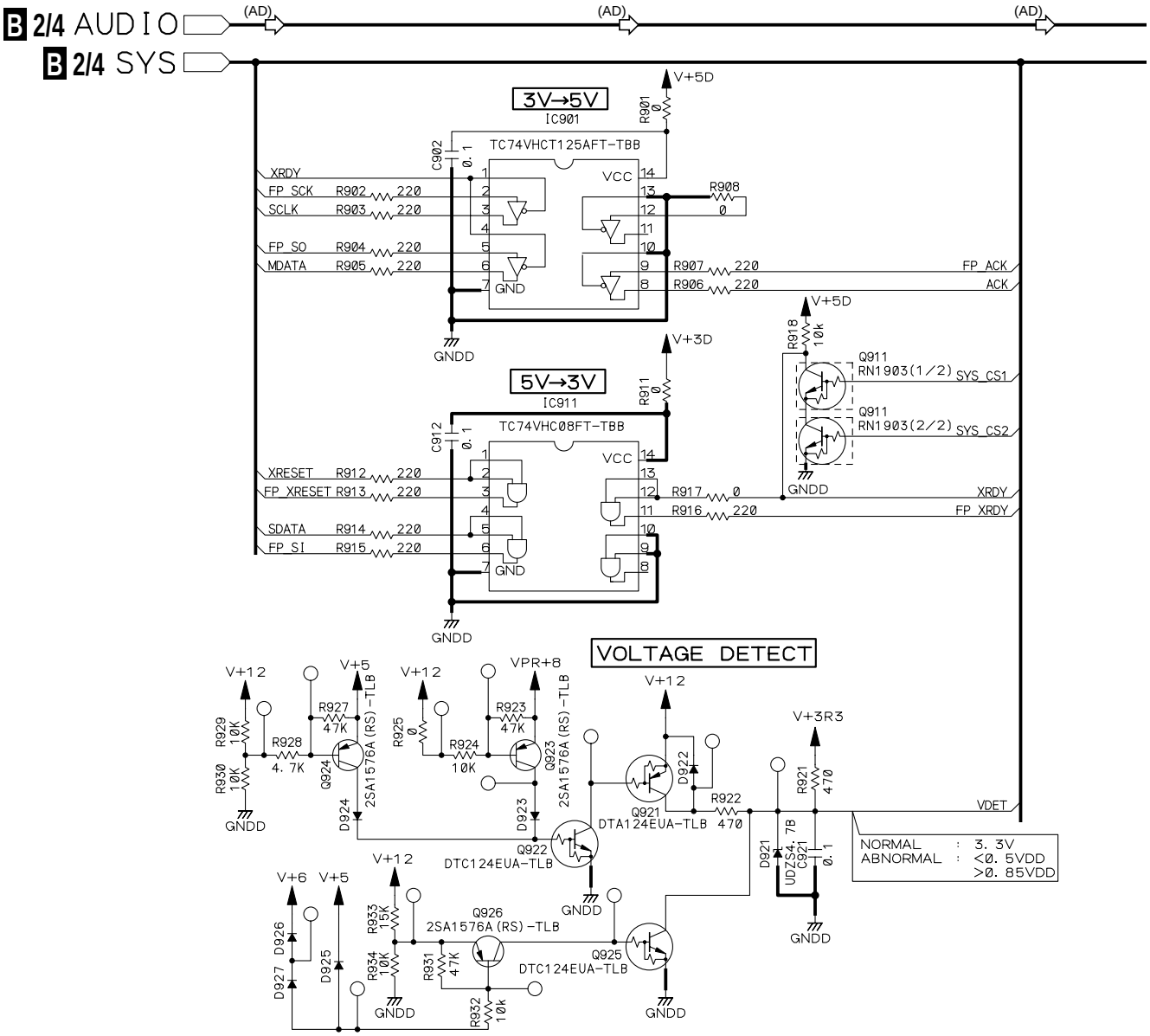
# B 2/4 DVDM ASSY (AWM7813)

(DVD) : DVD DATA SIGNAL ROUTE
(Cr/R) : VIDEO SIGNAL ROUTE (Cr/R)
(CY/G) : VIDEO SIGNAL ROUTE (CY/G)
(Cb/B) : VIDEO SIGNAL ROUTE (Cb/B)
(Y) : S VIDEO SIGNAL ROUTE (Y)
(C) : S VIDEO SIGNAL ROUTE (Y)
(C/V) : S VIDEO SIGNAL ROUTE (C/V)
(AD) : AUDIO DATA SIGNAL ROUTE



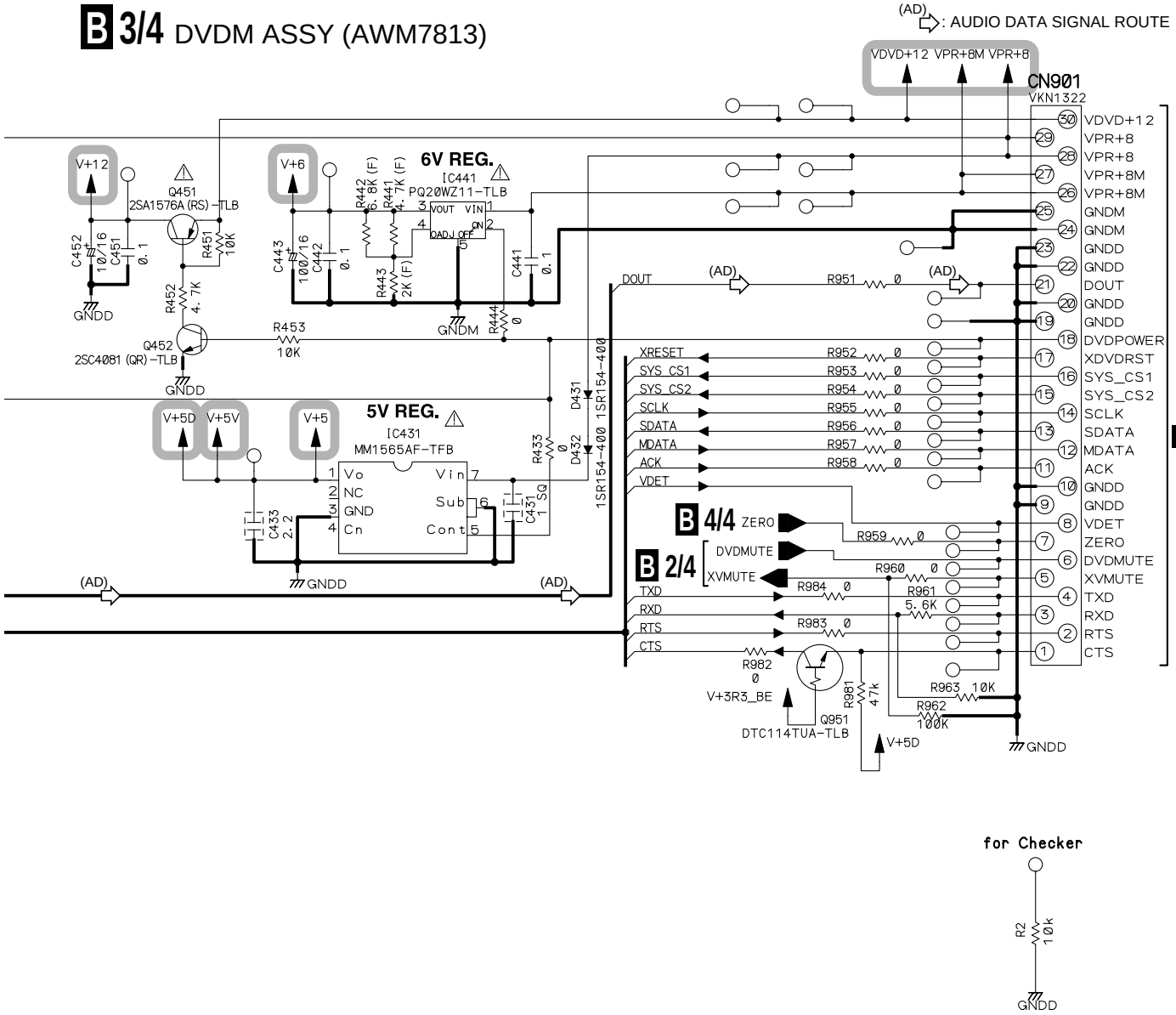
# 3.5 DVDM ASSY(3/4)




B 3/4

# B 3/4 DVDM ASSY (AWM7813)



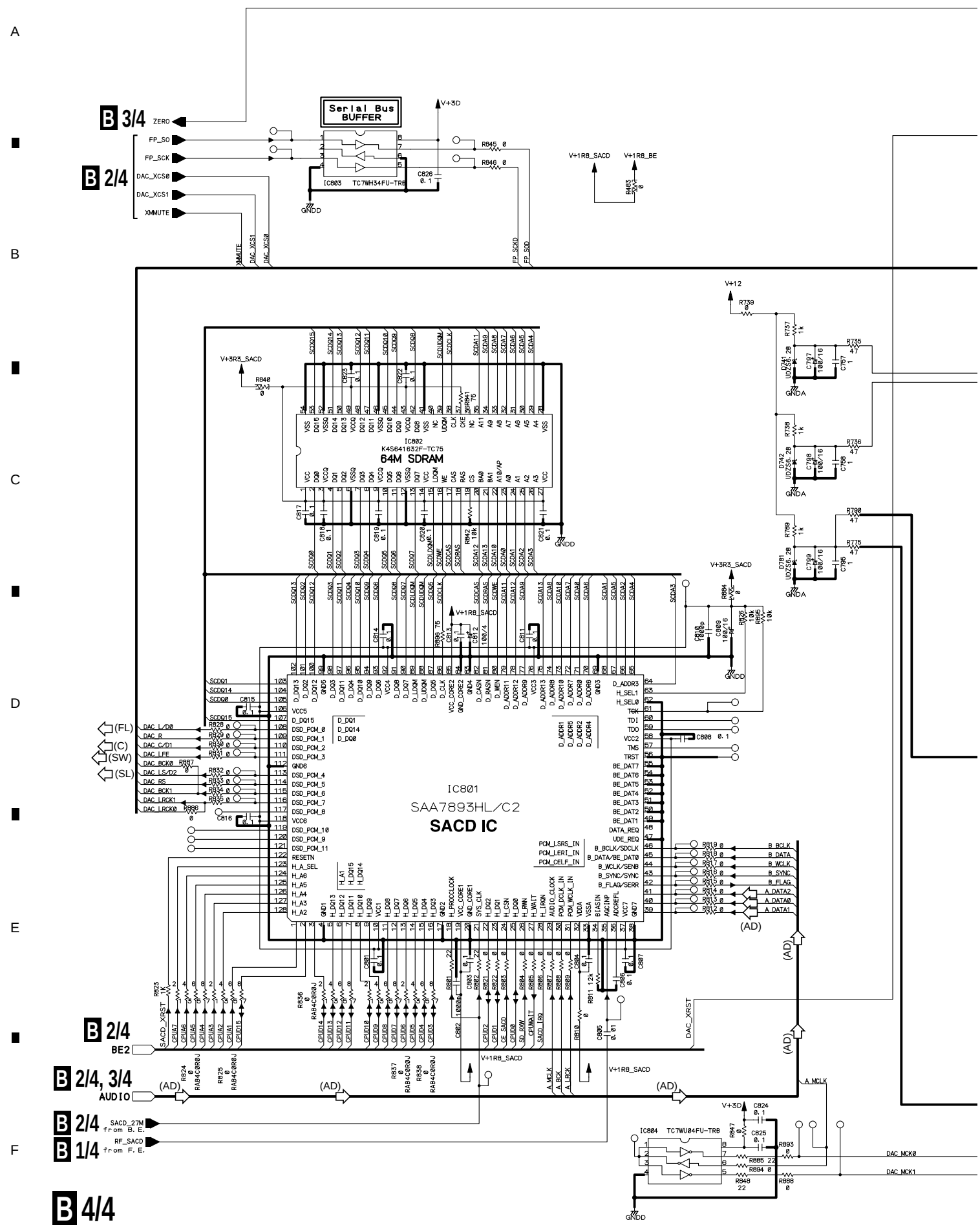

for Checker



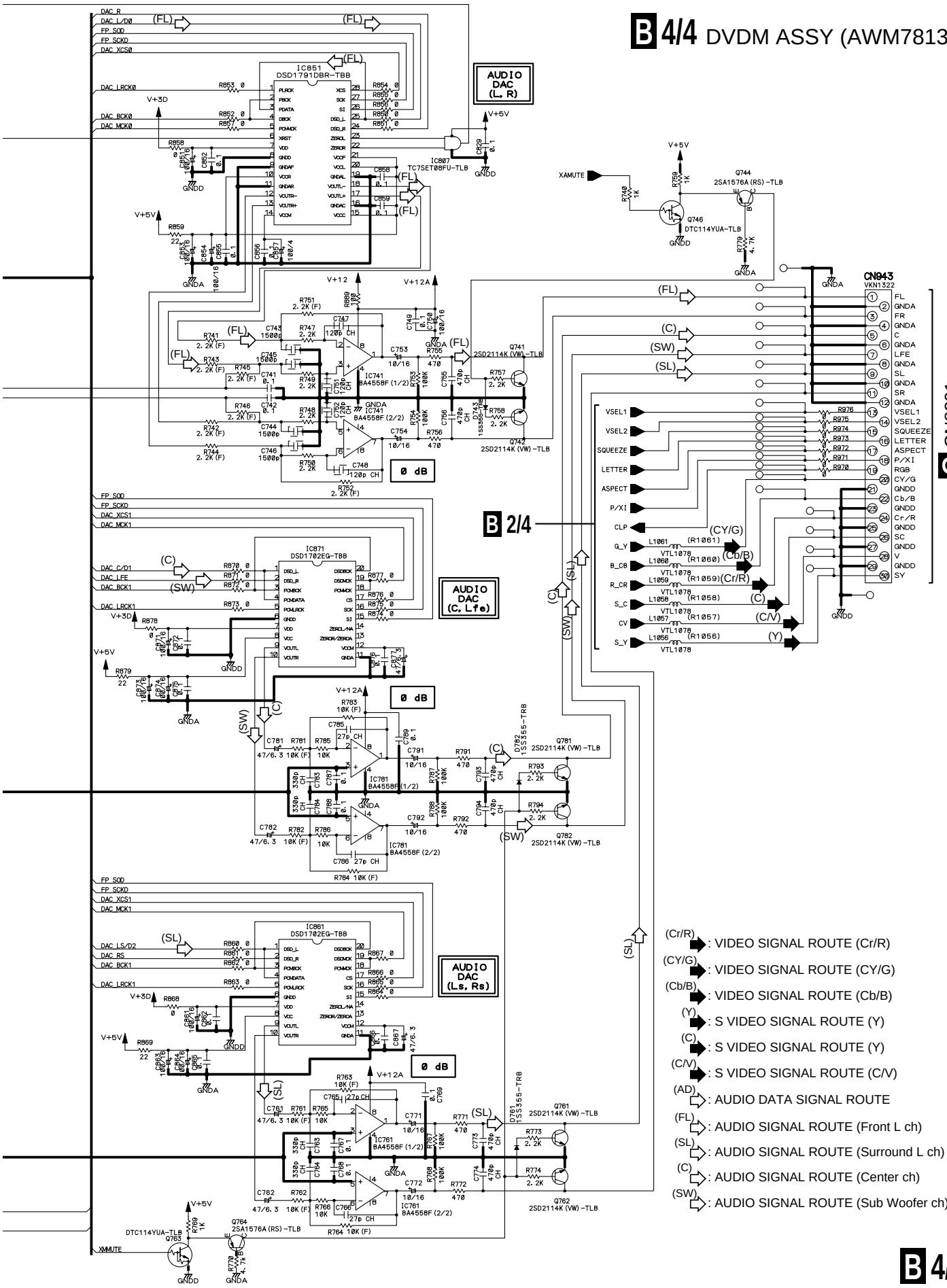

: The power supply is shown with the marked box.

B 3/4

# 3.6 DVDM ASSY(4/4)

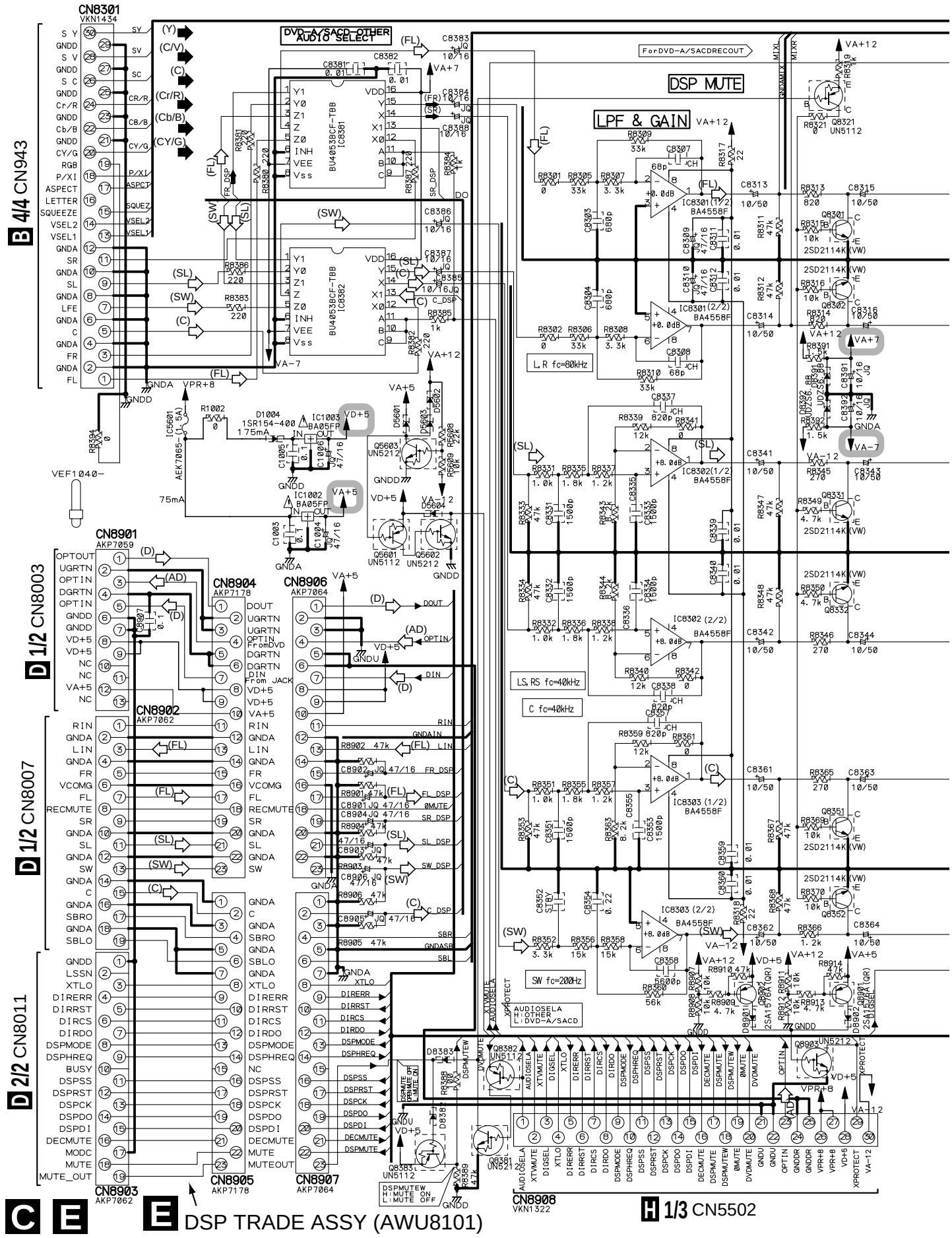


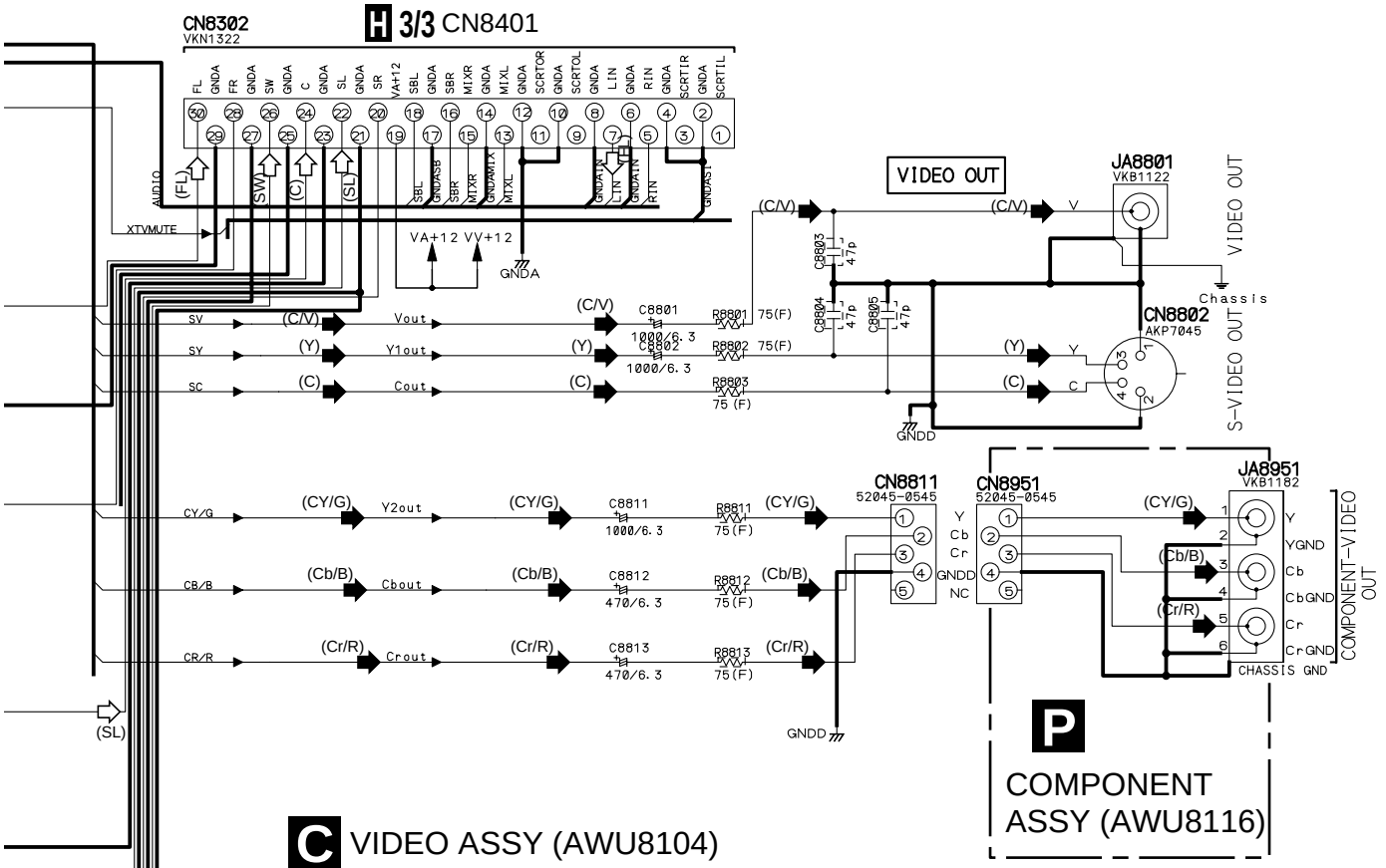
# B 4/4 DVDM ASSY (AWM7813)



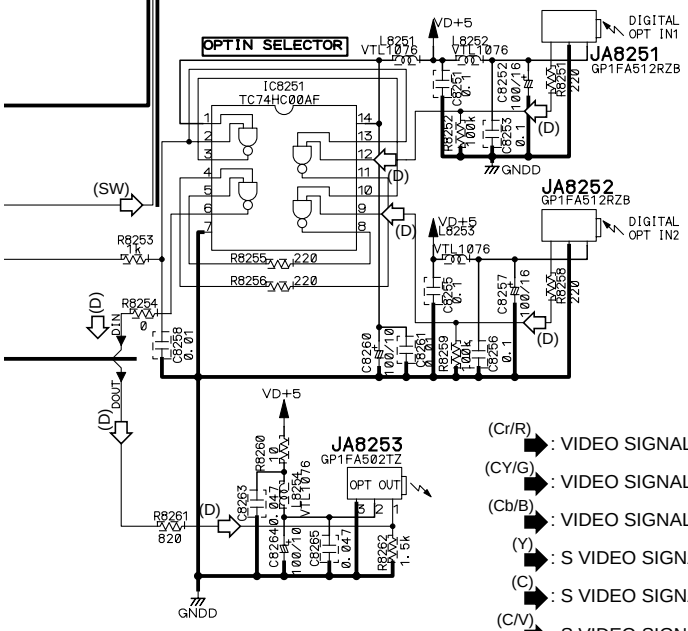

B 4/4

# 3.7 VIDEO, DSP TRADE and COMPONENT ASSYS






: The power supply is shown with the marked box.




CAUTION :
FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE ONLY WITH SAME TYPE NO. 49101.5F MFD, BY LITTELFUSE INK. FOR IC5601 (AEK7065).

(Cr/R) : VIDEO SIGNAL ROUTE (Cr/R)
(CY/G) : VIDEO SIGNAL ROUTE (CY/G)
(Cb/B) : VIDEO SIGNAL ROUTE (Cb/B)
(Y) : S VIDEO SIGNAL ROUTE (Y)
(C) : S VIDEO SIGNAL ROUTE (Y)
(C/V) : S VIDEO SIGNAL ROUTE (C/V)

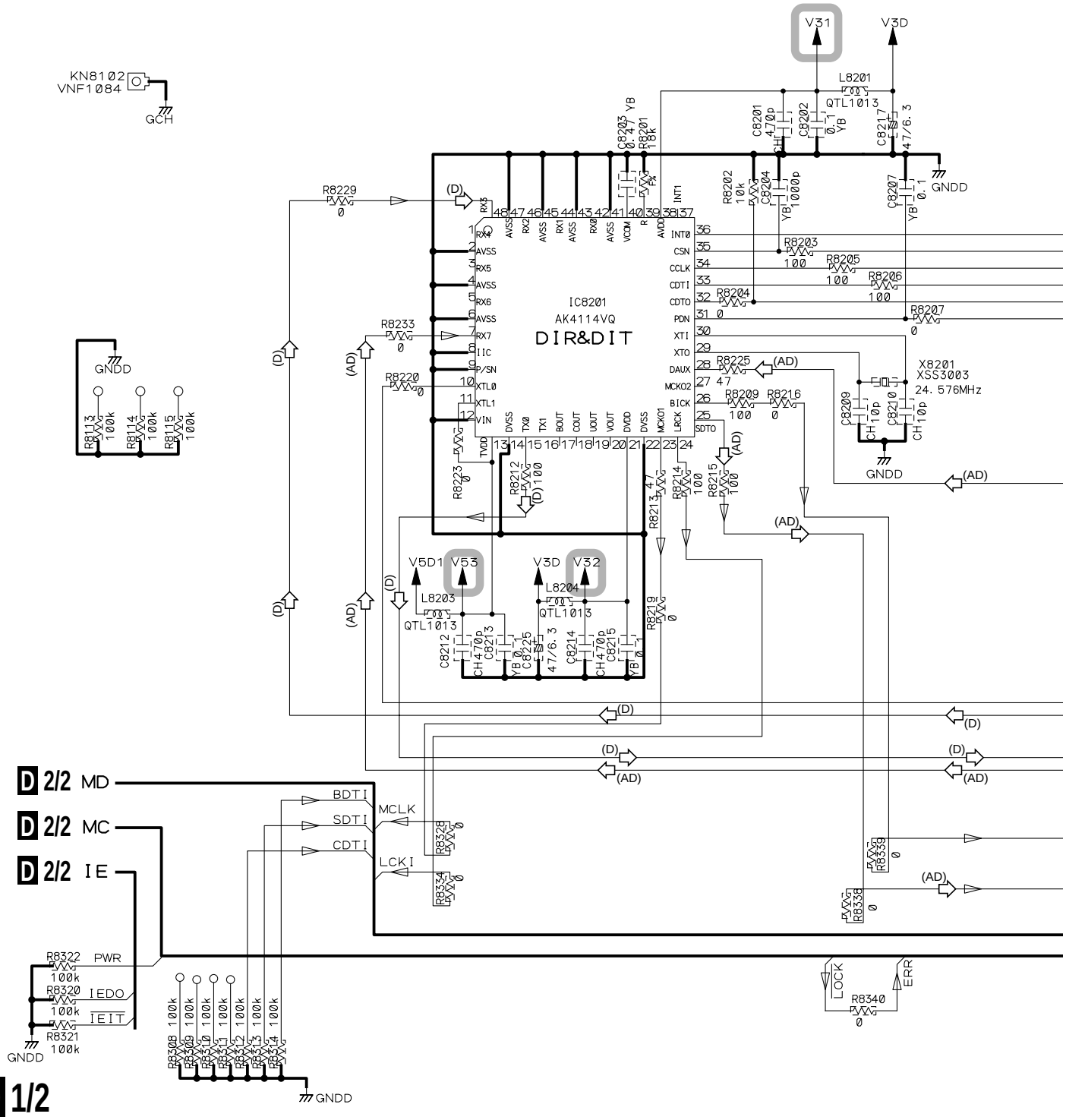
(FL) : AUDIO SIGNAL ROUTE (Front L ch)
(SL) : AUDIO SIGNAL ROUTE (Surround L ch)
(C) : AUDIO SIGNAL ROUTE (Center ch)
(SW) : AUDIO SIGNAL ROUTE (Sub Woofer ch)
(D) : AUDIO SIGNAL ROUTE (DIGITAL ch)
(AD) : AUDIO DATA SIGNAL ROUTE

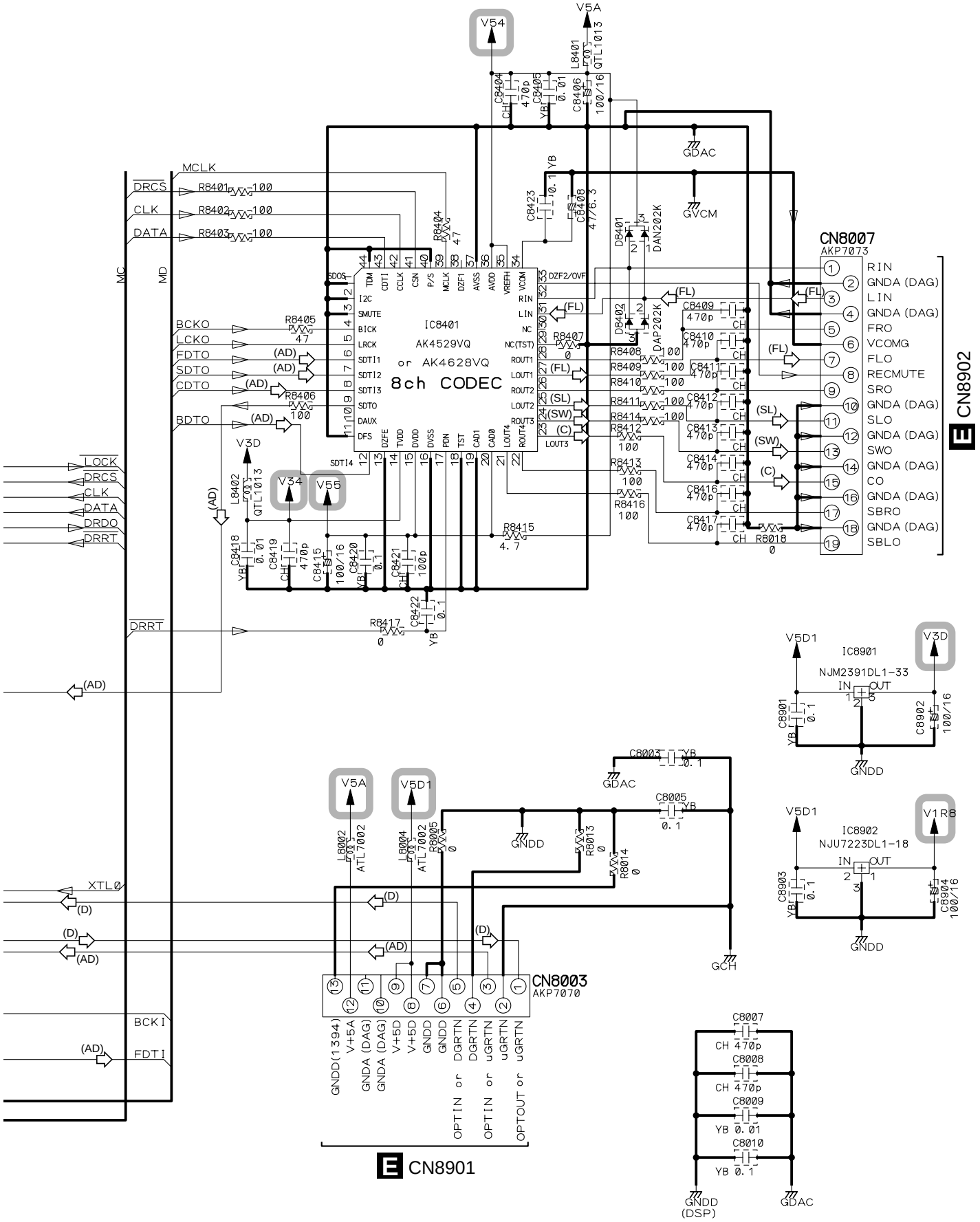
C P

# 3.8 DSP ASSY(1/2)

## D 1/2 DSP ASSY (AWX8325)

(AD) ⇨: AUDIO DATA SIGNAL ROUTE
(FL) ⇨: AUDIO SIGNAL ROUTE (Front L ch)
(SL) ⇨: AUDIO SIGNAL ROUTE (Surround L ch)
(C) ⇨: AUDIO SIGNAL ROUTE (Center ch)
(SW) ⇨: AUDIO SIGNAL ROUTE (Sub Woofer ch)
(D) ⇨: AUDIO SIGNAL ROUTE (DIGITAL ch)



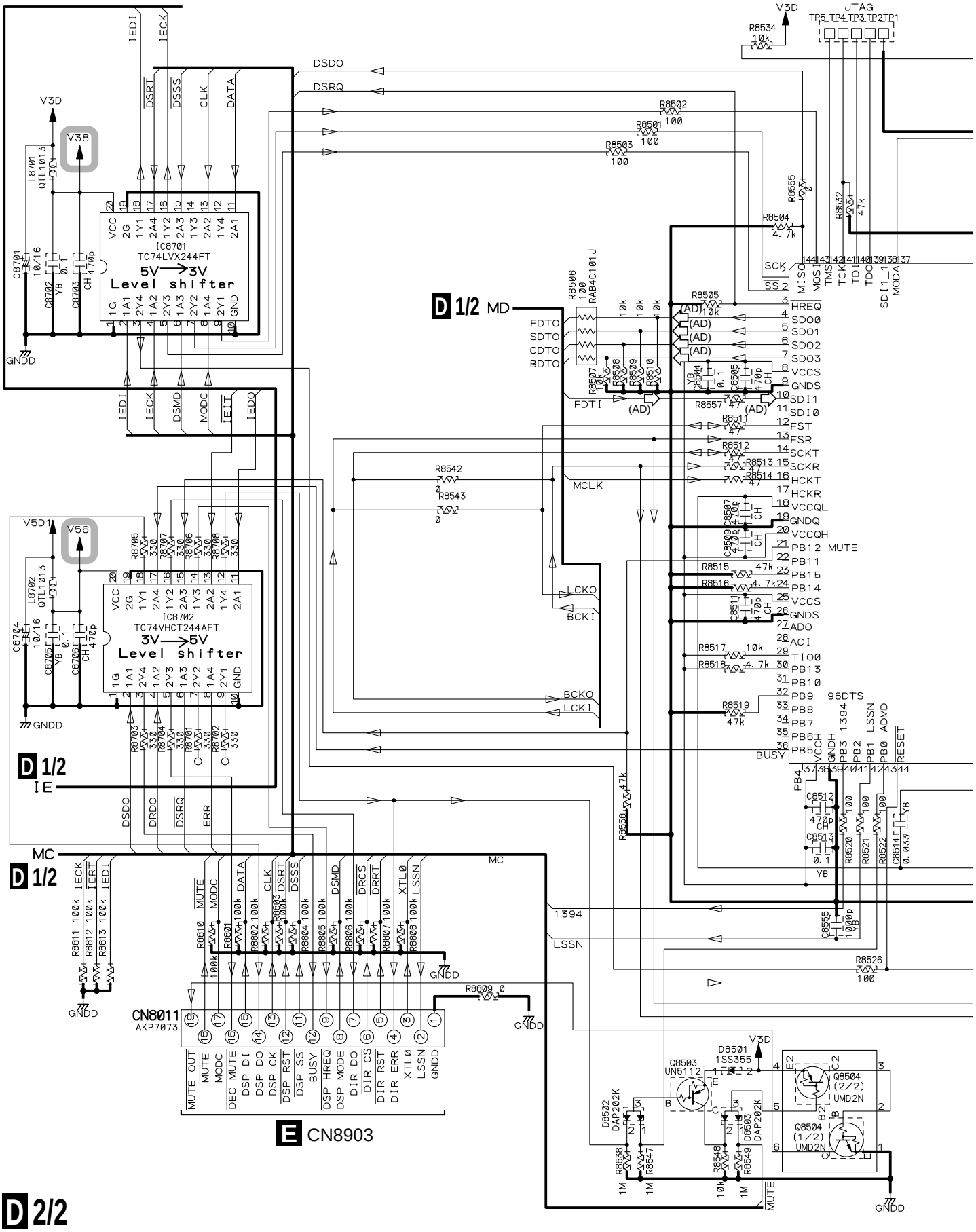



: The power supply is shown with the marked box.

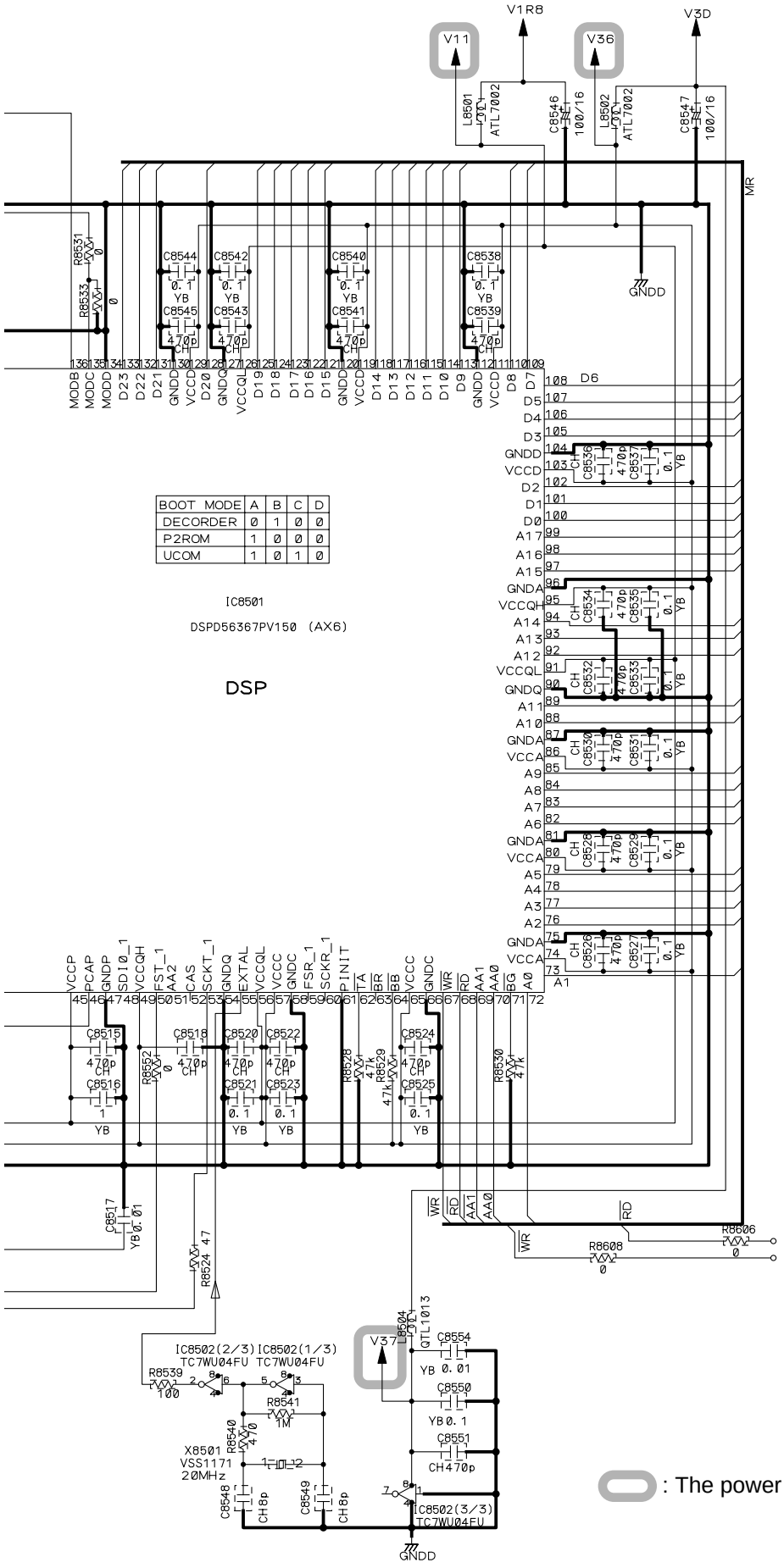
D 1/2

# 3.9 DSP ASSY(2/2)

## D 2/2 DSP ASSY (AWX8325)



(AD) : AUDIO DATA SIGNAL ROUTE

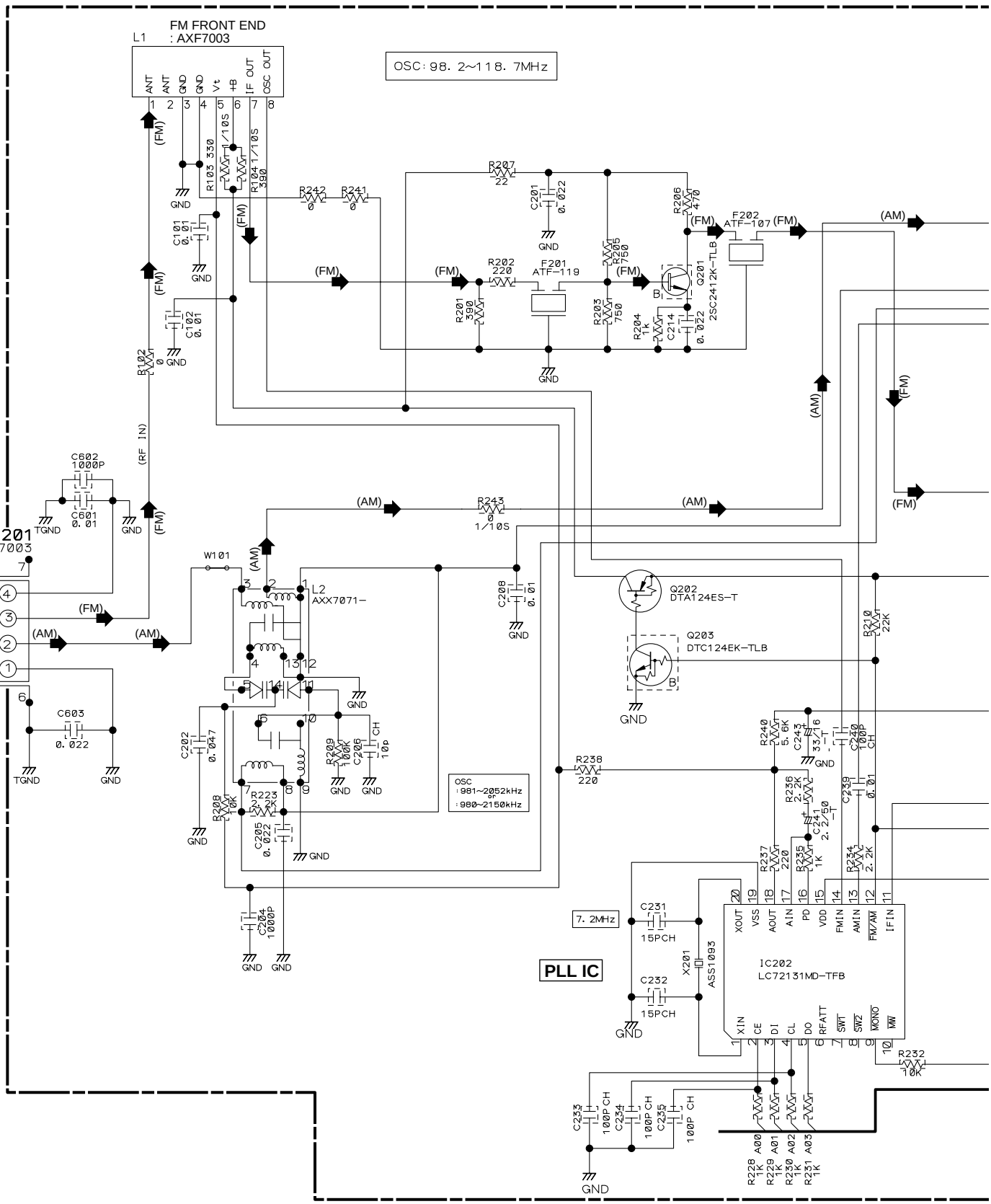

V1R8
V11
V36
V3D
L8501 10U ATL7002
L8502 10U ATL7002
C8546 1UF 100/16
C8547 1UF 100/16
MR
GNDD
R8531 0
R8533 0
C8544 0.1 YB
C8542 0.1 YB
C8540 0.1 YB
C8538 0.1 YB
C8545 470p CH
C8543 470p CH
C8541 470p CH
C8539 470p CH
MODB MODC MODD D23 D22 D21 GNDD VCCD D20 GNDQ VCCQL D19 D18 D17 D16 D15 GNDD VCCD D14 D13 D12 D11 D10 D9 GNDD VCCD D8 D7
D6 D5 D4 D3 GNDD VCCD D2 D1 D0 A17 A16 A15 GNDA VCCQH A14 A13 A12 VCCQL GNDQ A11 A10 GNDA VCCA A9 A8 A7 A6 GNDA VCCA A5 A4 A3 A2 GNDA VCCA A1
C8536 C8537 C8534 C8535 C8532 C8533 C8530 C8531 C8528 C8529 C8526 C8527
BOOT MODE | A | B | C | D
DECORDER | 0 | 1 | 0 | 0
P2ROM | 1 | 0 | 0 | 0
UCOM | 1 | 0 | 1 | 0
IC8501
DSPD56367PV150 (AX6)
DSP
VCCP PCAP GNDP SDIO_1 VCCQH FST_1 AA2 CAS SCKT_1 GNDQ EXTAL VCCQL VCCC GNDC FSR_1 SCKR_1 PINIT TA BR BB VCCC GNDC WR RD AA1 AA0 BG A0
C8515 C8516 C8518 C8520 C8521 C8522 C8523 C8524 C8525
R8552 R8528 R8529 R8530
C8517 0.01 YB
R8524 47
WR RD AA1 AA0
R8606 0
R8608 0
IC8502(2/3) IC8502(1/3)
TC7WU04FU TC7WU04FU
R8539 100
R8541 1M
R8540 470
X8501 VSS1171 20MHz
C8548 CH8p
C8549 CH8p
L8504 QTL1013
C8554 YB 0.01
C8550 YB 0.1
C8551 CH 470p
IC8502(3/3) TC7WU04FU
GNDD

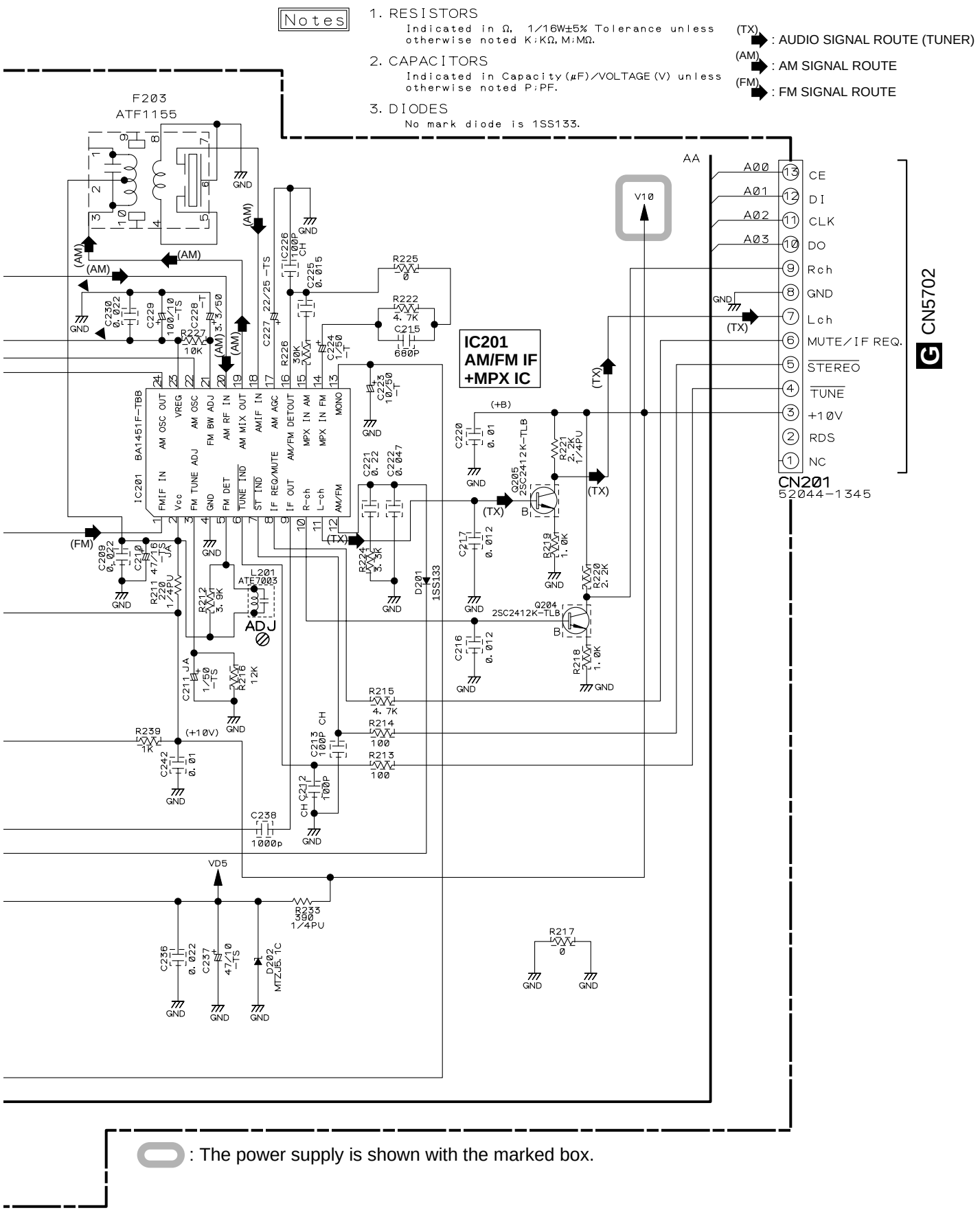
: The power supply is shown with the marked box.

D 2/2

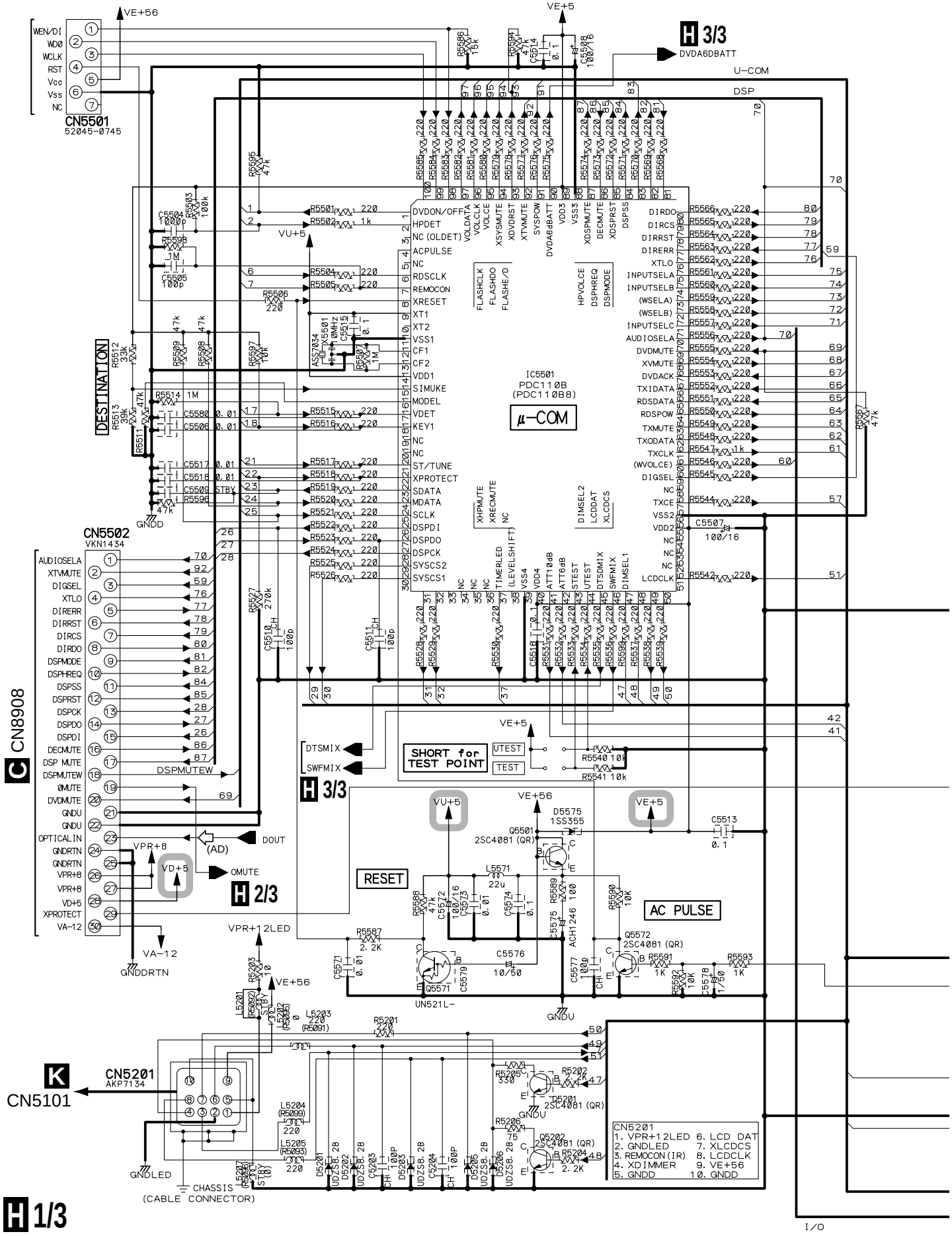
# 3.10 FM/AM TUNER MODULE

## F FM/AM TUNER MODULE (AXQ7228)



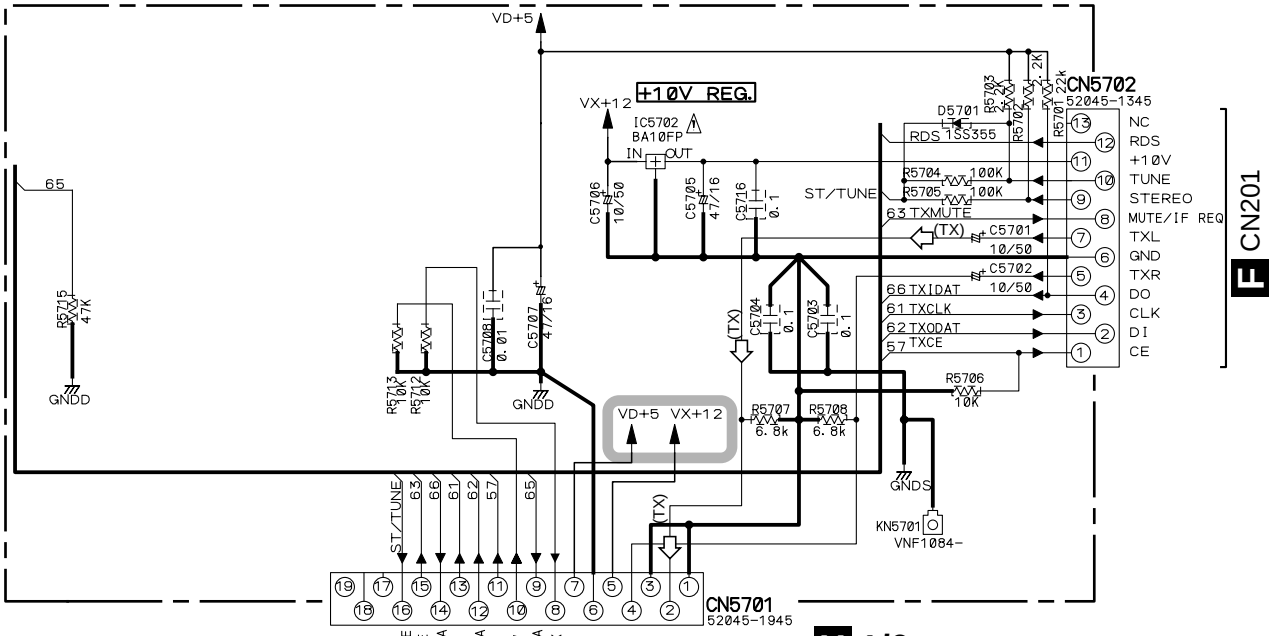

Notes
1. RESISTORS
Indicated in Ω, 1/16W±5% Tolerance unless otherwise noted K;KΩ, M;MΩ.
2. CAPACITORS
Indicated in Capacity(μF)/VOLTAGE(V) unless otherwise noted P;PF.
3. DIODES
No mark diode is 1SS133.
(TX) : AUDIO SIGNAL ROUTE (TUNER)
(AM) : AM SIGNAL ROUTE
(FM) : FM SIGNAL ROUTE
IC201
AM/FM IF
+MPX IC
IC201 BA1451F-TBB
CN201
52044-1345
CN5702
L201 ATE7003
ADJ
Q205 2SC2412K-TLB
Q204 2SC2412K-TLB
D201 1SS133
D202 MTZJ5.1C
F203 ATF1155
: The power supply is shown with the marked box.

# 3.11 TATRADE and CONTROL(1/3) ASSYS

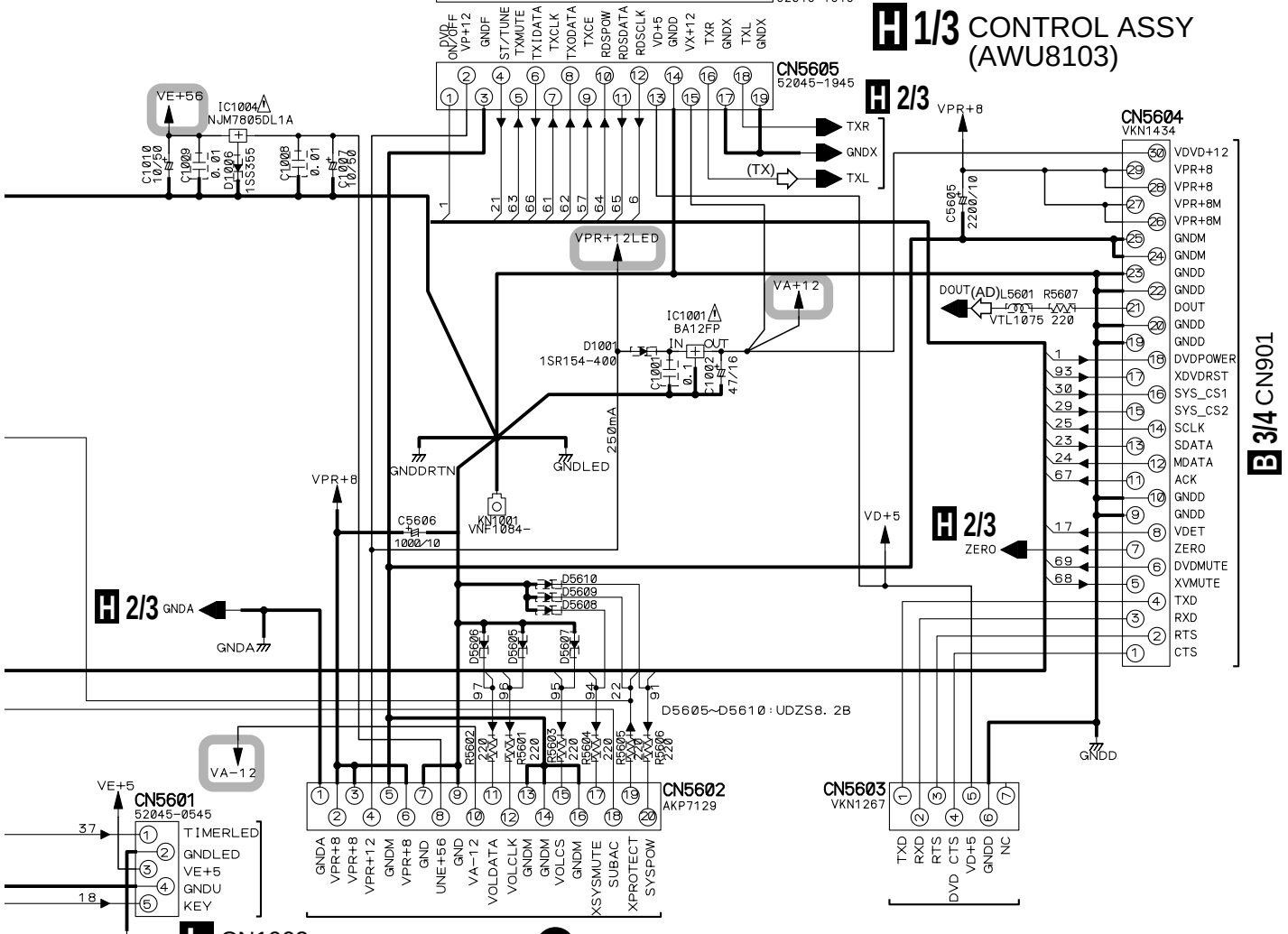


: The power supply is shown with the marked box.

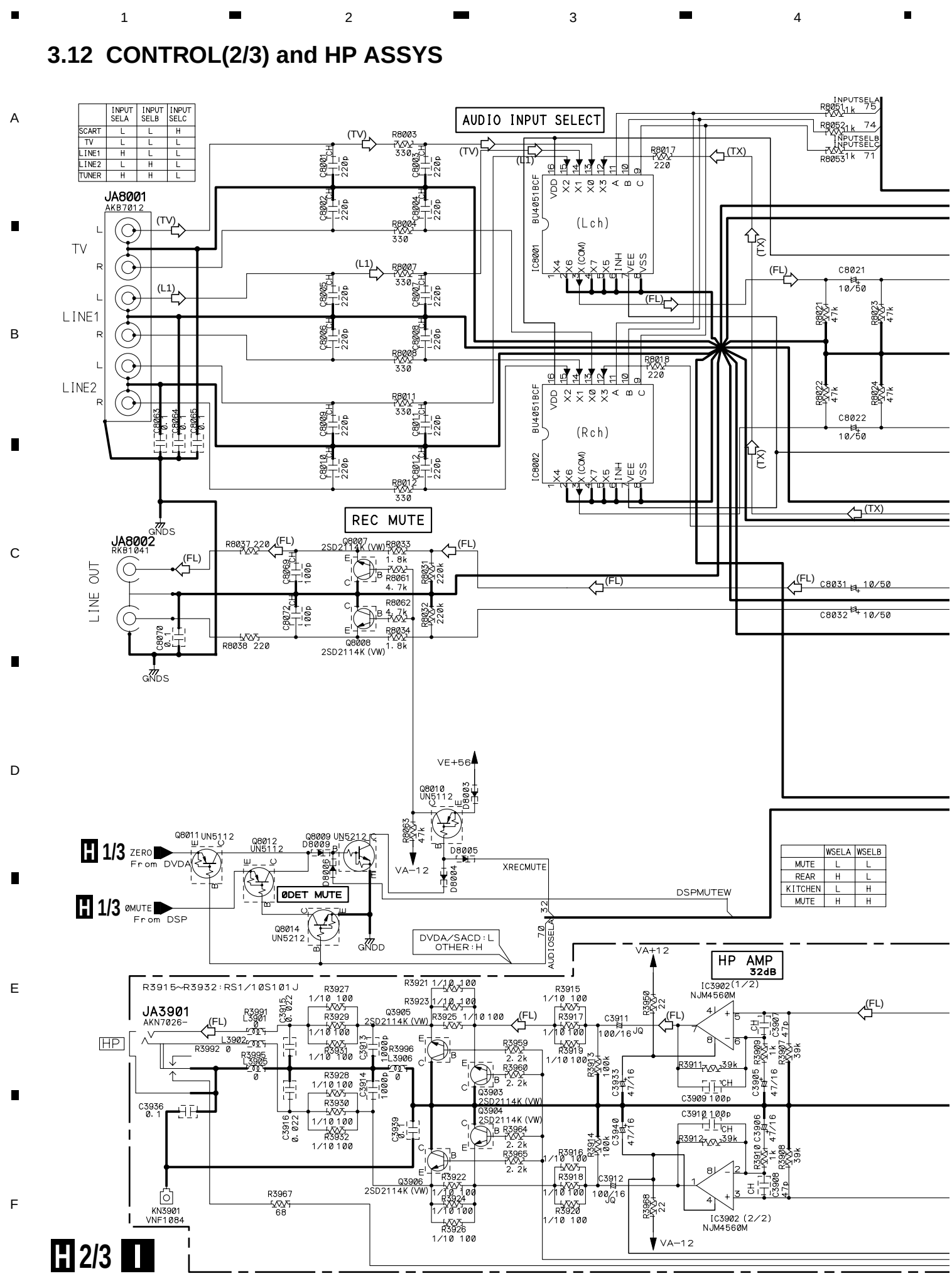
## G TXTRADE ASSY (AWU8115)




## H 1/3 CONTROL ASSY (AWU8103)



# 3.12 CONTROL(2/3) and HP ASSYS

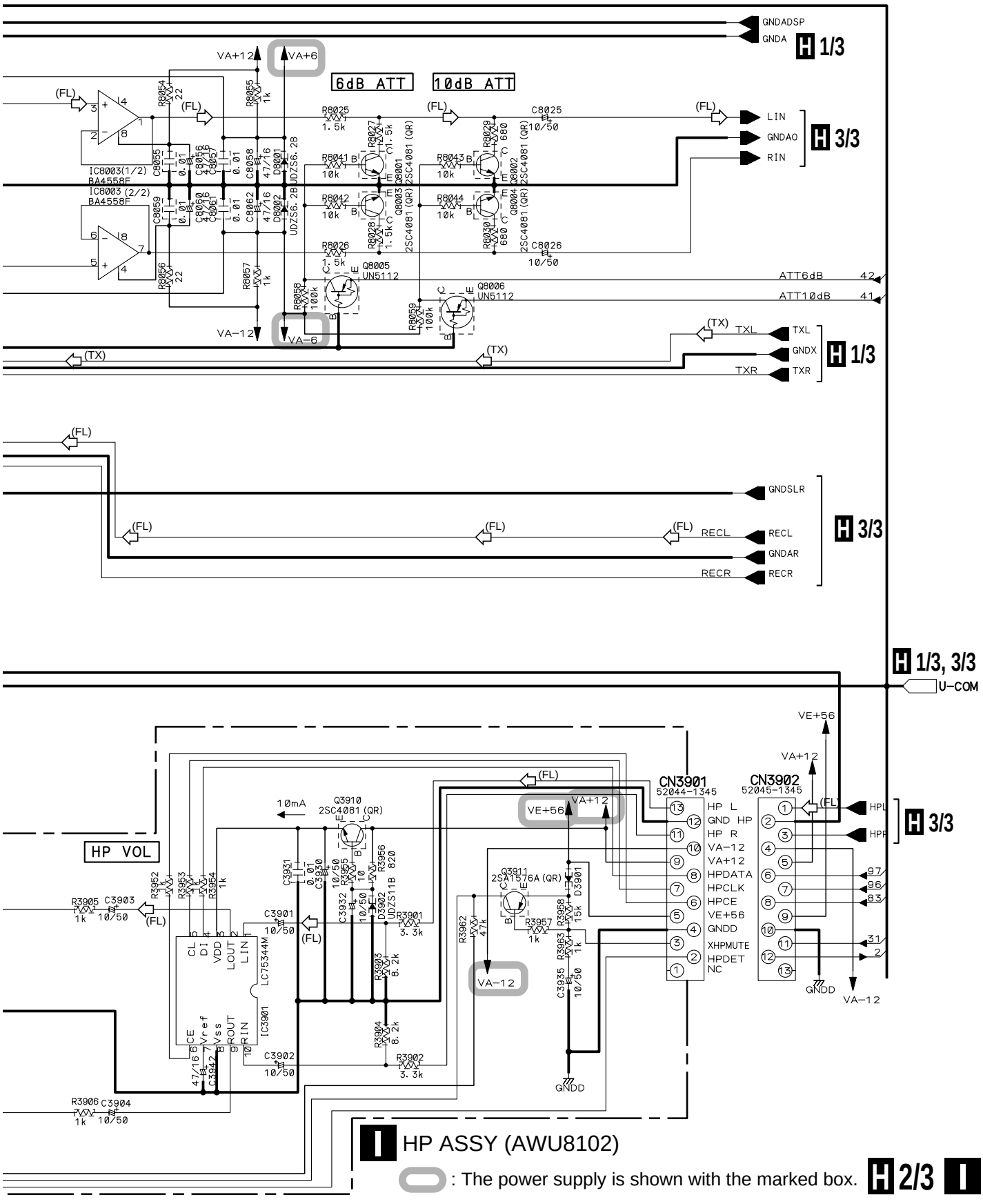



| | INPUT SELA | INPUT SELB | INPUT SELC |
|---|---|---|---|
| SCART | L | L | H |
| TV | L | L | L |
| LINE1 | H | L | L |
| LINE2 | L | H | L |
| TUNER | H | H | L |

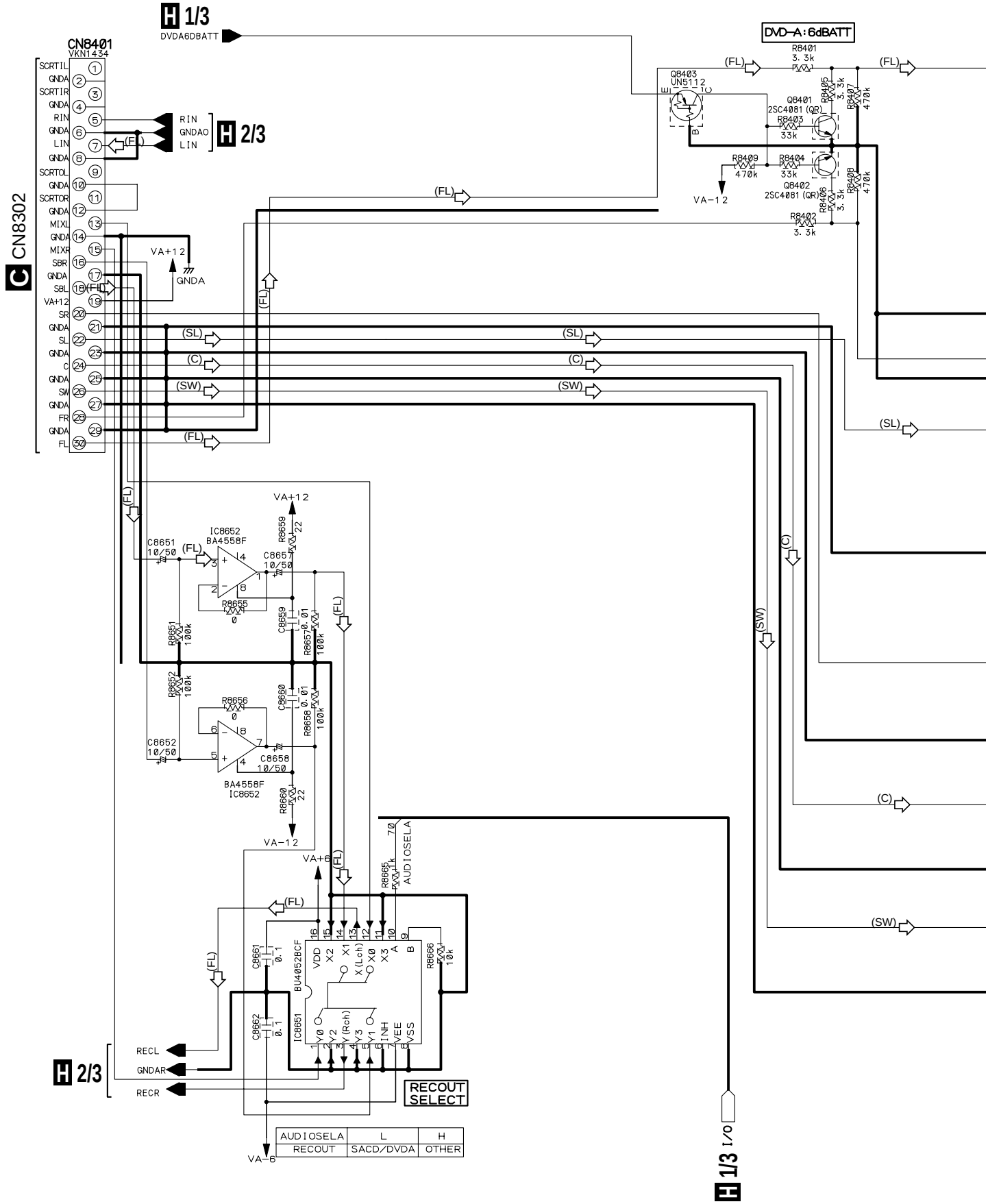
| | WSELA | WSELB |
|---|---|---|
| MUTE | L | L |
| REAR | H | L |
| KITCHEN | L | H |
| MUTE | H | H |

(FL) : AUDIO SIGNAL ROUTE (Front L ch)
(TV) : AUDIO SIGNAL ROUTE (TV L ch)
(L1) : AUDIO SIGNAL ROUTE (LINE 1 L ch)
(TX) : AUDIO SIGNAL ROUTE (Tuner L ch)

# H 2/3 CONTROL ASSY ( AWU8103)

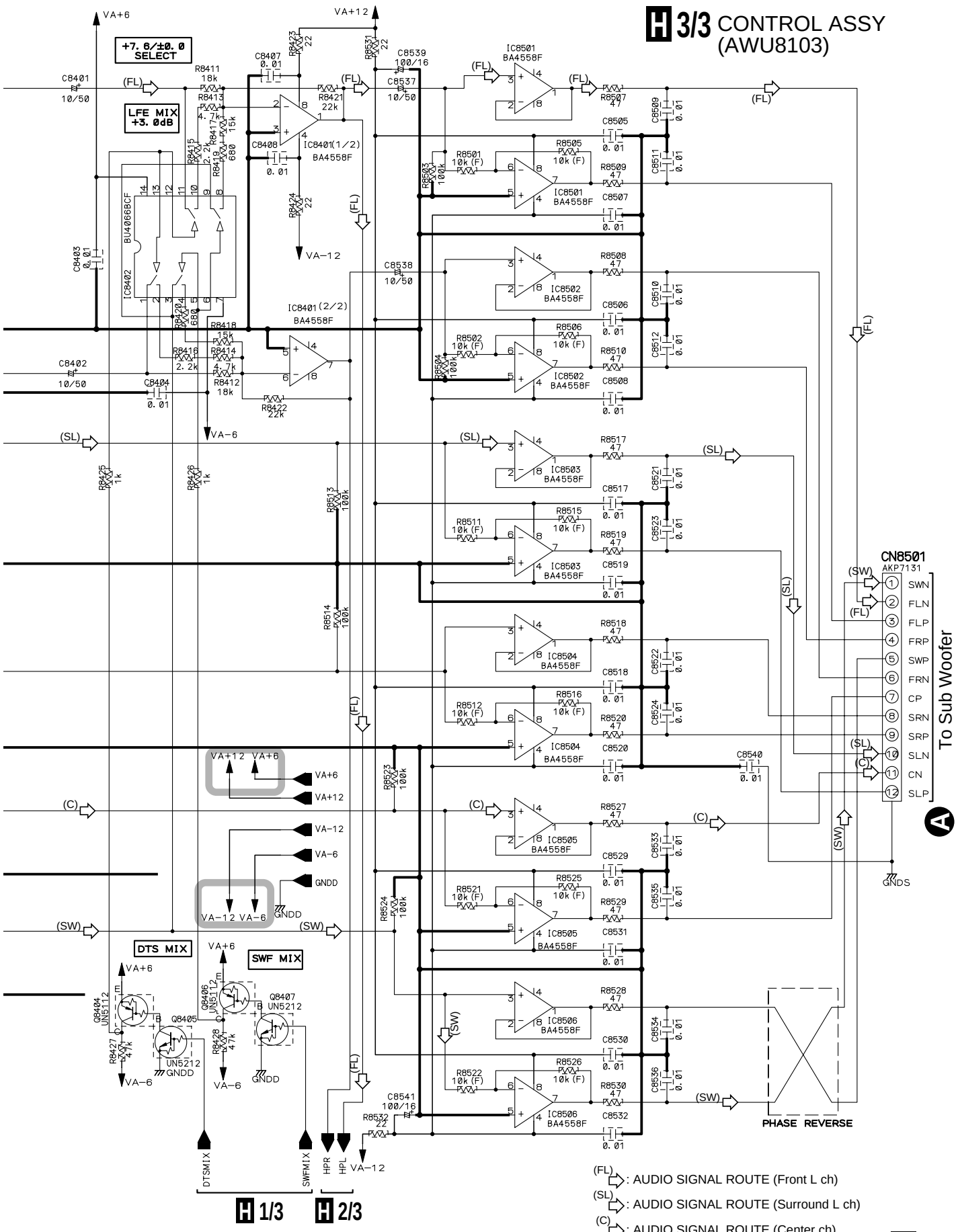


# 3.13 CONTROL ASSY(3/3)




H 3/3

# H 3/3 CONTROL ASSY (AWU8103)




(FL): AUDIO SIGNAL ROUTE (Front L ch)
(SL): AUDIO SIGNAL ROUTE (Surround L ch)
(C): AUDIO SIGNAL ROUTE (Center ch)
(SW): AUDIO SIGNAL ROUTE (Sub Woofer ch)

: The power supply is shown with the marked box.

H 1/3 H 2/3

H 3/3

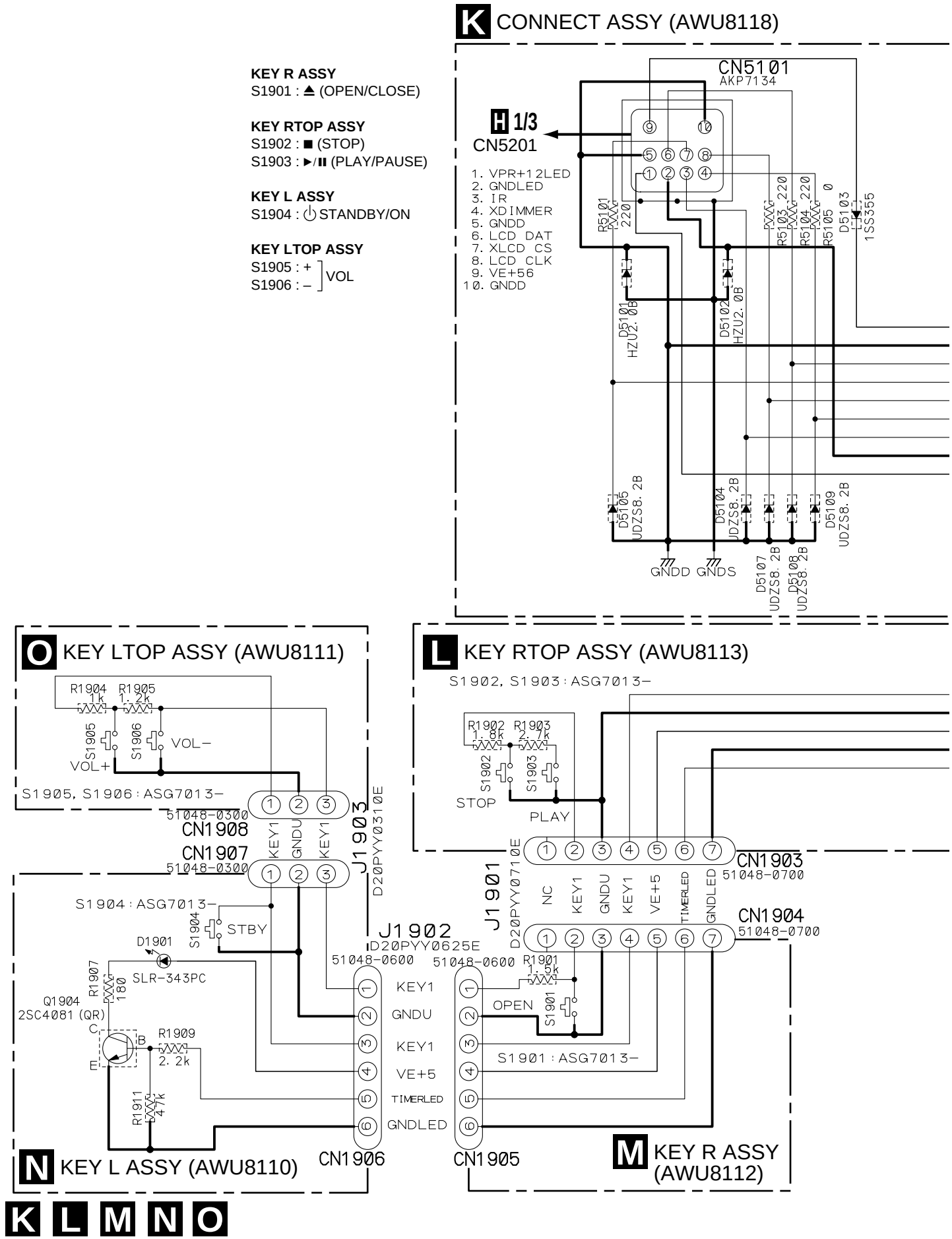
# 3.14 LCDCONT, CONNECT, KEY RTOP, KEY R, KEY L and KEY LTOP ASSYS

**KEY R ASSY**
S1901 : ⏏ (OPEN/CLOSE)

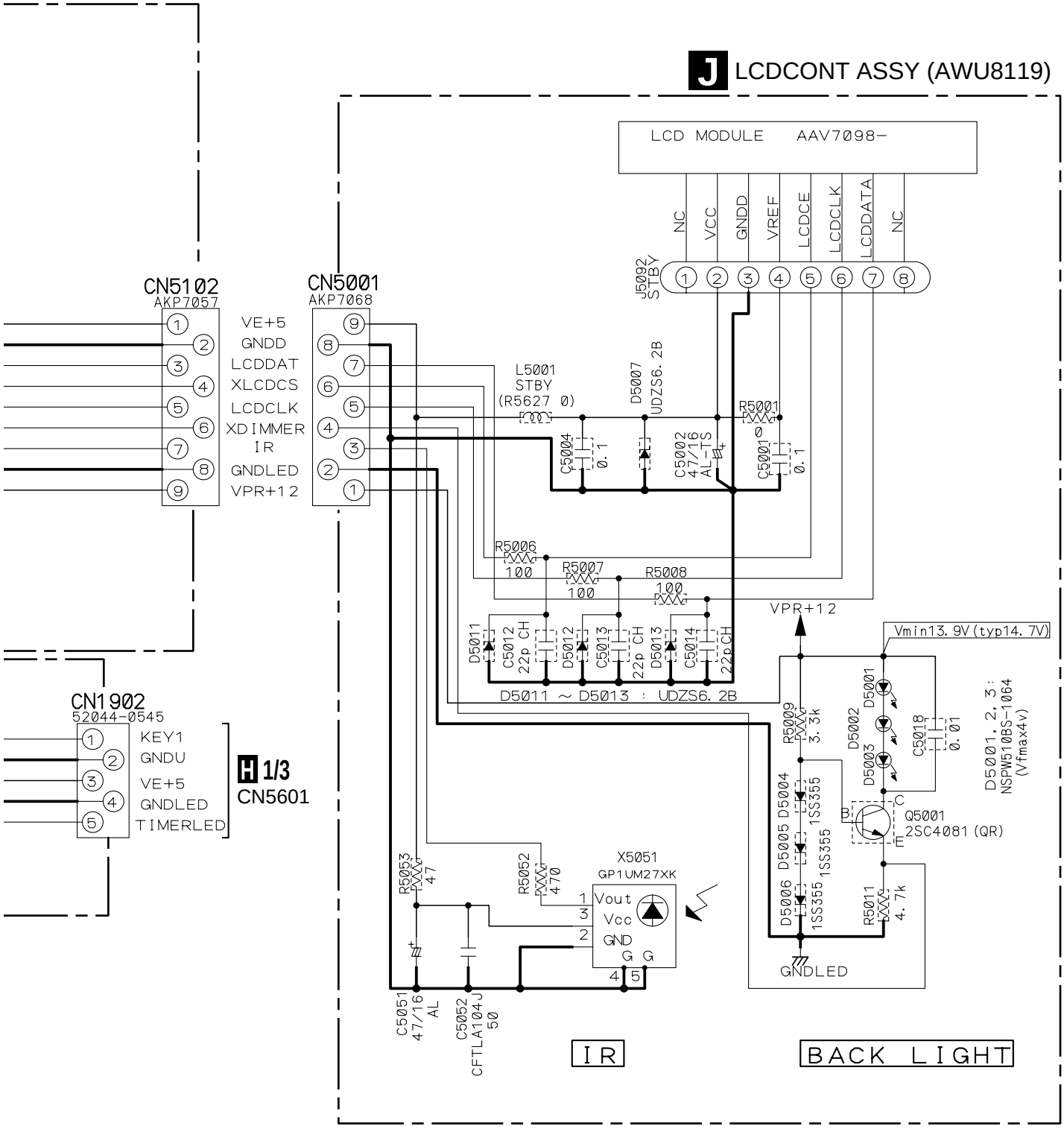
**KEY RTOP ASSY**
S1902 : ■ (STOP)
S1903 : ▶/❚❚ (PLAY/PAUSE)

**KEY L ASSY**
S1904 : ⏻ STANDBY/ON

**KEY LTOP ASSY**
S1905 : + ] VOL
S1906 : – ]




K L M N O


J LCDCONT ASSY (AWU8119)
LCD MODULE AAV7098-
NC
VCC
GNDD
VREF
LCDCE
LCDCLK
LCDDATA
NC
J5092
STBY
CN5102
AKP7057
CN5001
AKP7068
VE+5
GNDD
LCDDAT
XLCDCS
LCDCLK
XDIMMER
IR
GNDLED
VPR+12
L5001
STBY
(R5627 0)
D5007
UDZS6.2B
R5001
0
C5004
0.1
C5002
47/16
AL-TS
C5001
0.1
R5006
100
R5007
100
R5008
100
D5011
C5012
22p CH
D5012
C5013
22p CH
D5013
C5014
22p CH
D5011 ~ D5013 : UDZS6.2B
VPR+12
Vmin13.9V(typ14.7V)
R5009
3.3k
D5001
D5002
D5003
C5018
0.01
D5001,2,3:
NSPW510BS-1064
(Vfmax4v)
D5004
1SS355
D5005
1SS355
D5006
1SS355
Q5001
2SC4081(QR)
R5011
4.7k
GNDLED
CN1902
52044-0545
KEY1
GNDU
VE+5
GNDLED
TIMERLED
H 1/3
CN5601
R5053
47
R5052
470
X5051
GP1UM27XK
Vout
Vcc
GND
C5051
47/16
AL
C5052
CFTLA104J
50
IR
BACK LIGHT

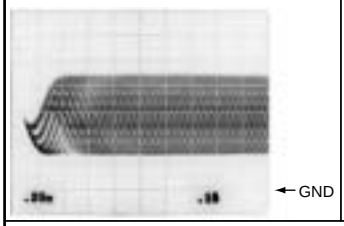
# 3.15 WAVEFORMS

Note : The encircled numbers denote measuring point in the schematic diagram.

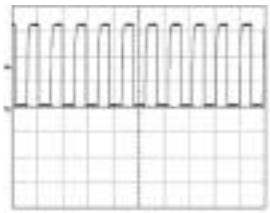
## B DVDM ASSY

Measurement condition ; No. 1, 2 and 12 to 17 : MJK1, Title 1-chp 1
No. 8 : CD, ABEX-784 Track 1
No. 13, 14 and 17 : DVD-REF-A1, T2-Chap.1
No. 3 to 5 : DVD-REF-A1, T2-Chap.19

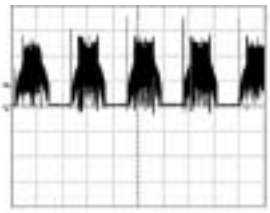
**1** **IC301 - pin 4 [RFOUT]**
V: 200mV/div. H: 0.1µsec/div.




**2** **IC301 - pin 36 [FG]**
V: 1V/div. H: 5msec/div.



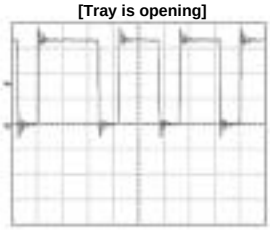
**3** **IC101 - pin 14 [A1], 13 [A2], 12 [A3]**
V: 2V/div. H: 2msec/div.



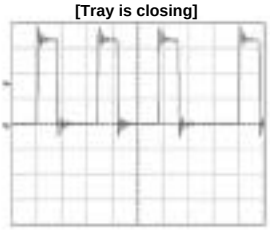
**4** **IC301 - pin 55 [LOAD_DRV]**
V: 1V/div. H: 500nsec/div.

**[Tray stops]**

**[Tray is opening]**

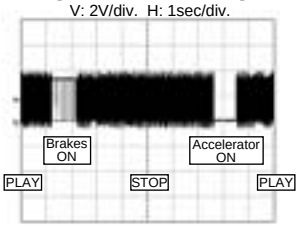


**[Tray is closing]**

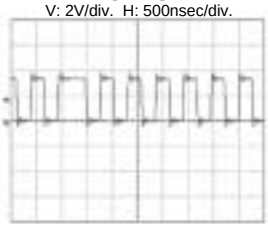


**5** **IC301 - pin 44 [SPDL_PDM]**

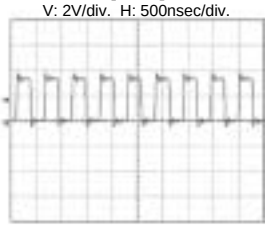
**[PLAY → STOP → PLAY]**
V: 2V/div. H: 1sec/div.



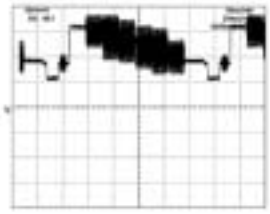

**[PLAY]**
V: 2V/div. H: 500nsec/div.



**[STOP]**
V: 2V/div. H: 500nsec/div.

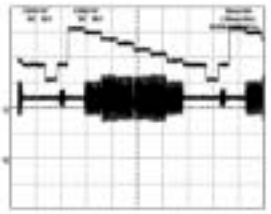


**6** **IC501 - pin 23 [Composite Video out]**
V: 1V/div. H: 10µsec/div.



**7** **IC501 - pin 21 [S Video out-Y]**
V: 1V/div. H: 10µsec/div.

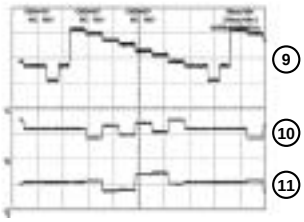
**8** **IC501 - pin 26 [S Video out-C]**
V: 1V/div. H: 10µsec/div.




**9** **IC501 - pin 20 [Component Video out-Y]**
V: 1V/div. H: 10µsec/div.

**10** **IC501 - pin 18 [Component Video out-Pb]**
V: 2V/div. H: 10µsec/div.

**11** **IC501 - pin 16 [Component Video out-Pr]**
V: 2V/div. H: 10µsec/div.



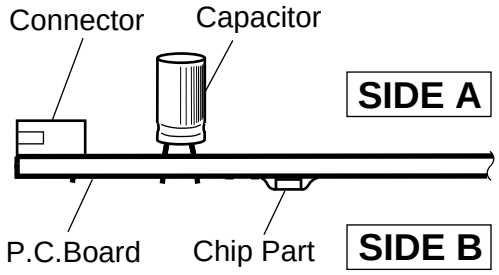
# 4. PCB CONNECTION DIAGRAM

## NOTE FOR PCB DIAGRAMS :

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

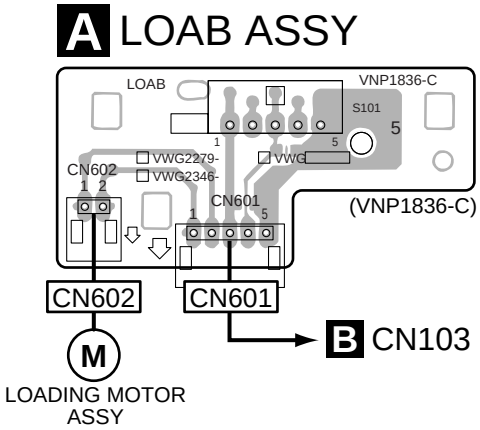
| Symbol In PCB Diagrams | Symbol In Schematic Diagrams | Part Name |
|---|---|---|
| B C E | B C E B C E | Transistor |
| B C E | B C E B C E | Transistor with resistor |
| D G S | D G S D G S | Field effect transistor |
| | | Resistor array |
| | | 3-terminal regulator |

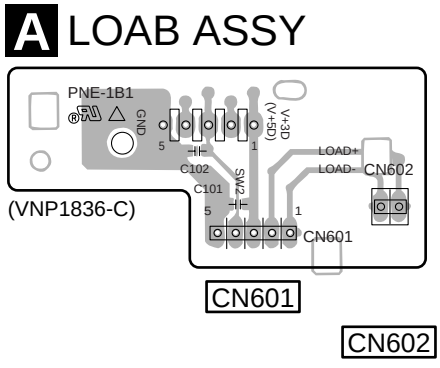
3. The parts mounted on this PCB include all necessary parts for several destinations.
   For further information for respective destinations, be sure to check with the schematic diagram.
4. View point of PCB diagrams.



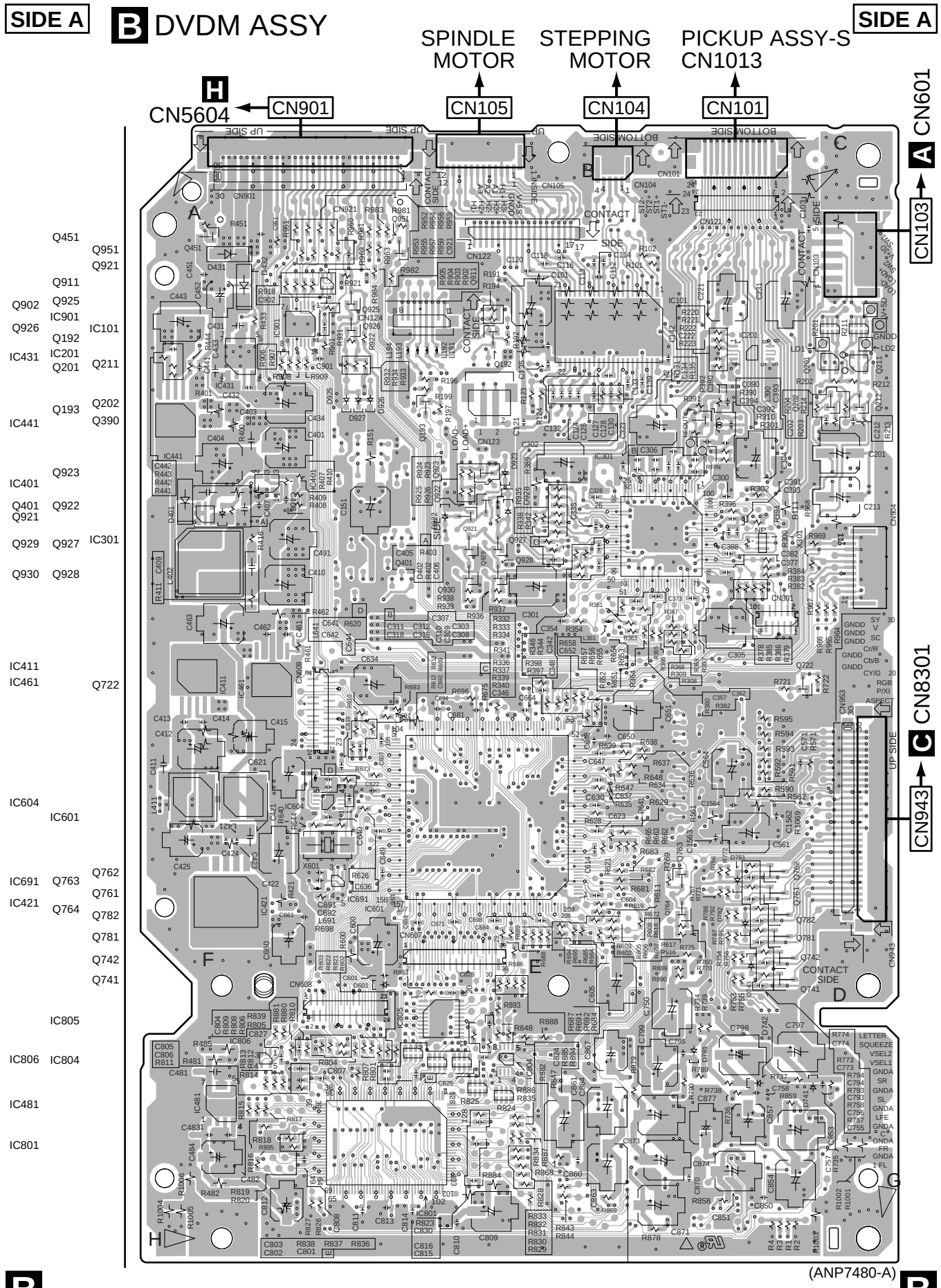

## 4.1 LOAB ASSY

**SIDE A** **SIDE B**



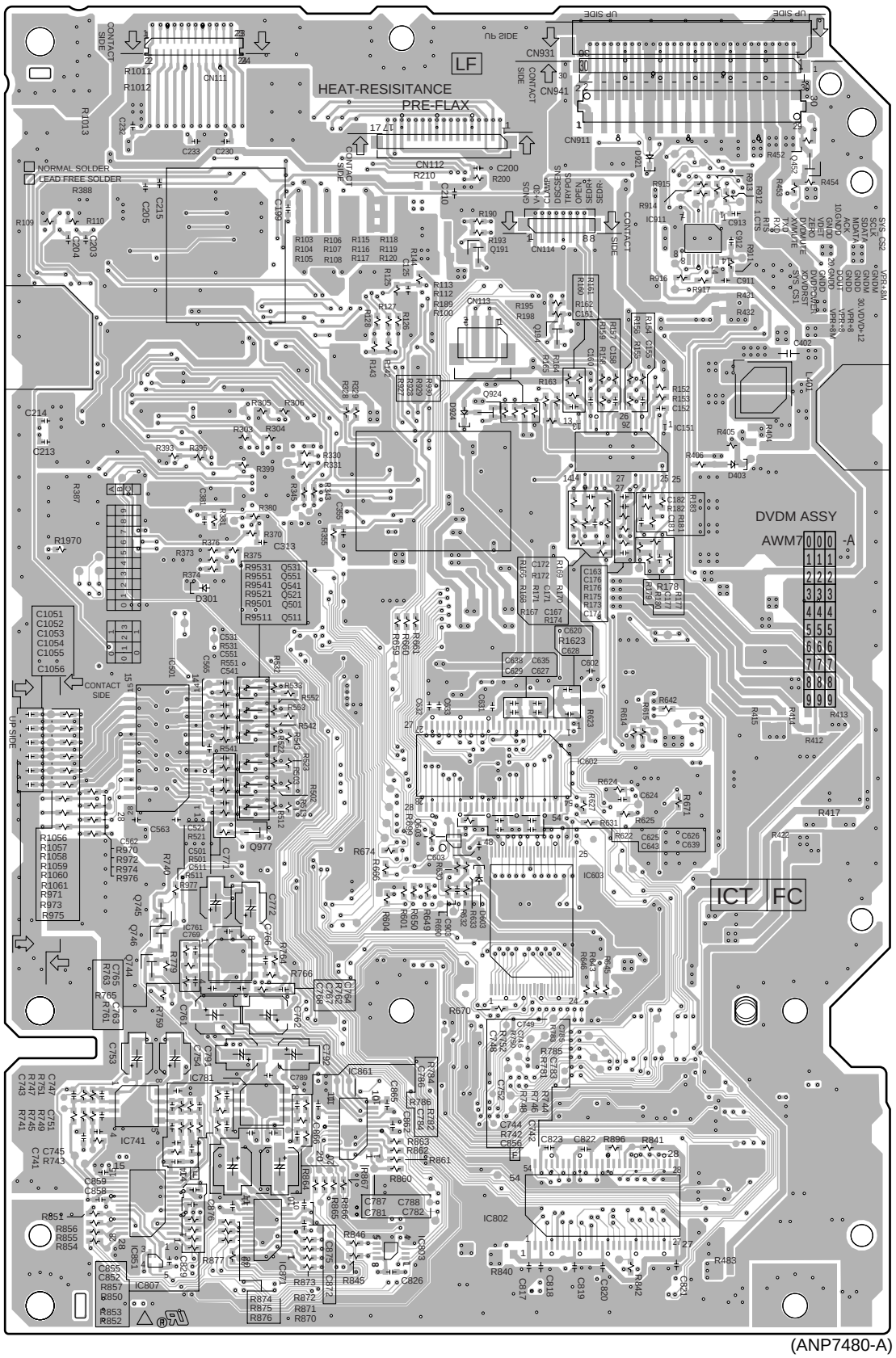
## 4.2 DVDM ASSY


SIDE A
B DVDM ASSY
SIDE A
SPINDLE MOTOR
STEPPING MOTOR
PICKUP ASSY-S
CN1013
H
CN5604
CN901
CN105
CN104
CN101
A CN601
CN103
C CN8301
CN943
UP SIDE
CONTACT SIDE
BOTTOM SIDE
Q451
Q951
Q921
Q911
Q902
Q925
IC901
Q926
IC101
Q192
IC431
IC201
Q201
Q211
Q193
Q202
IC441
Q390
Q923
IC401
Q401
Q922
Q921
Q929
Q927
IC301
Q930
Q928
IC411
IC461
Q722
IC604
IC601
Q762
IC691
Q763
Q761
IC421
Q764
Q782
Q781
Q742
Q741
IC805
IC806
IC804
IC481
IC801
(ANP7480-A)

SIDE B

SIDE B

# B DVDM ASSY

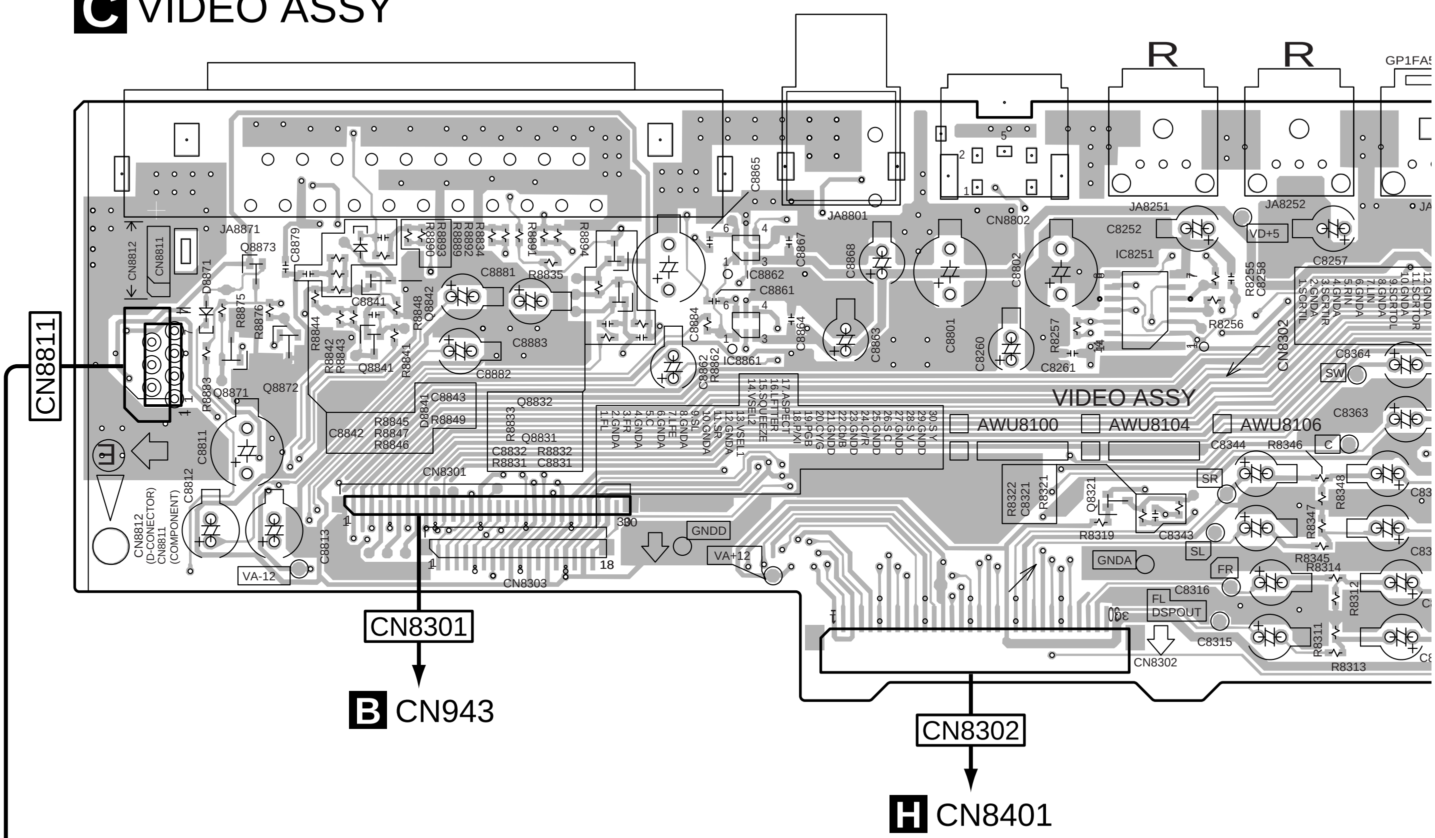



(ANP7480-A)

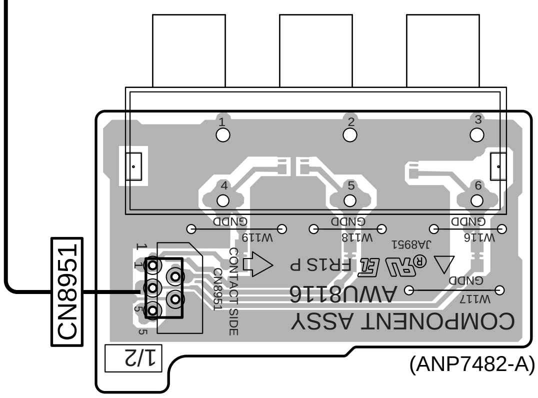
## 4.3 VIDEO, DSP TRADE and COMPONENT ASSYS

**SIDE A**

### C VIDEO ASSY



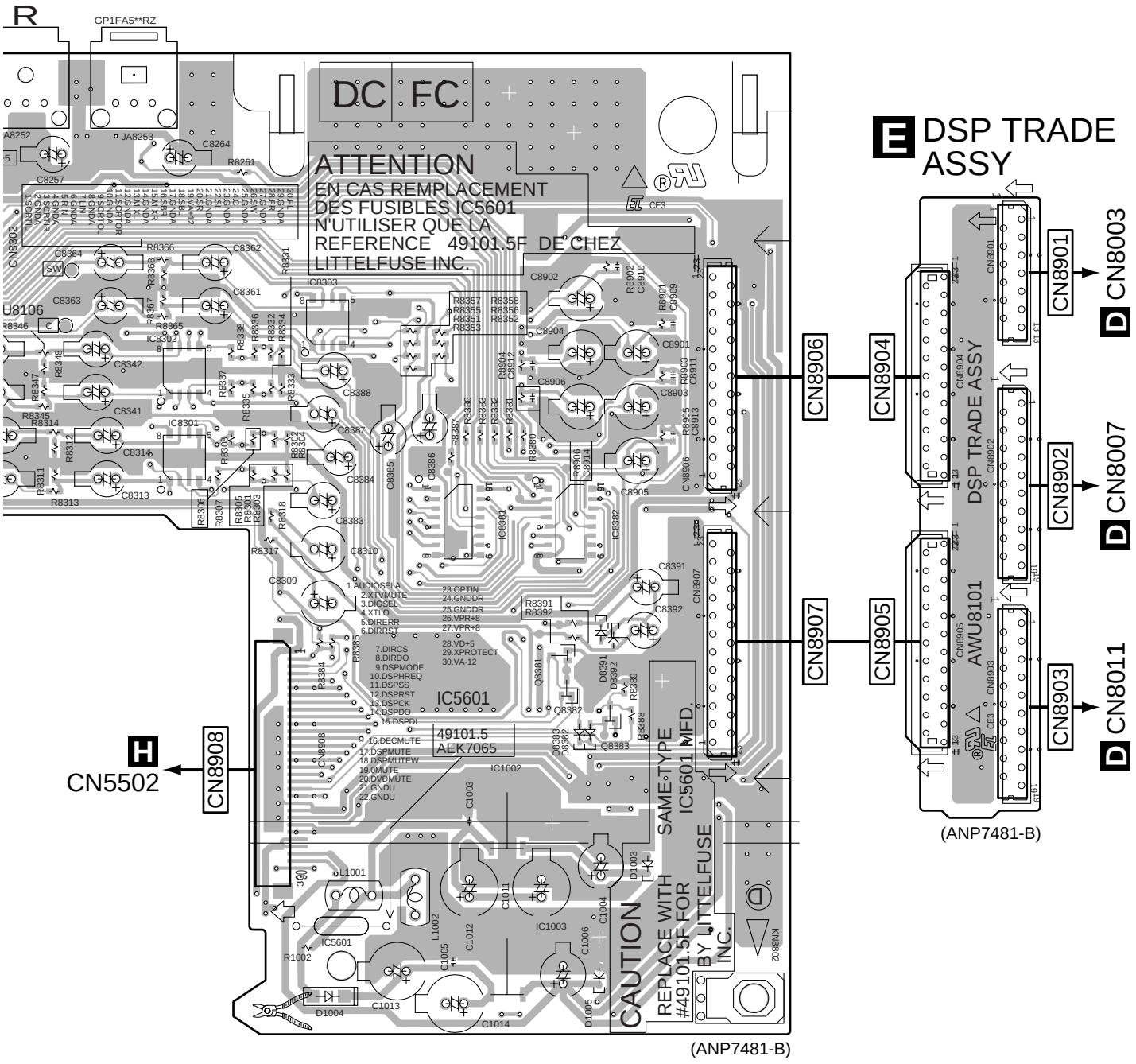

### P COMPONENT ASSY




Q8873 Q8842 Q8832 IC8862 IC8251
Q8871 Q8872 Q8841 Q8831 IC8861 Q8321

**C P**

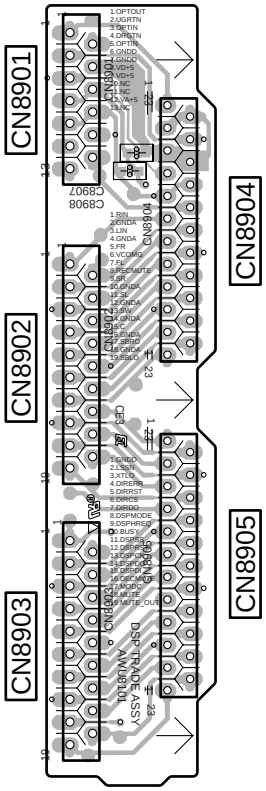
**SIDE A**




IC8302 IC8303
IC8301 IC8381 IC8382
Q8381
Q8382
IC5601 IC1003 Q8383

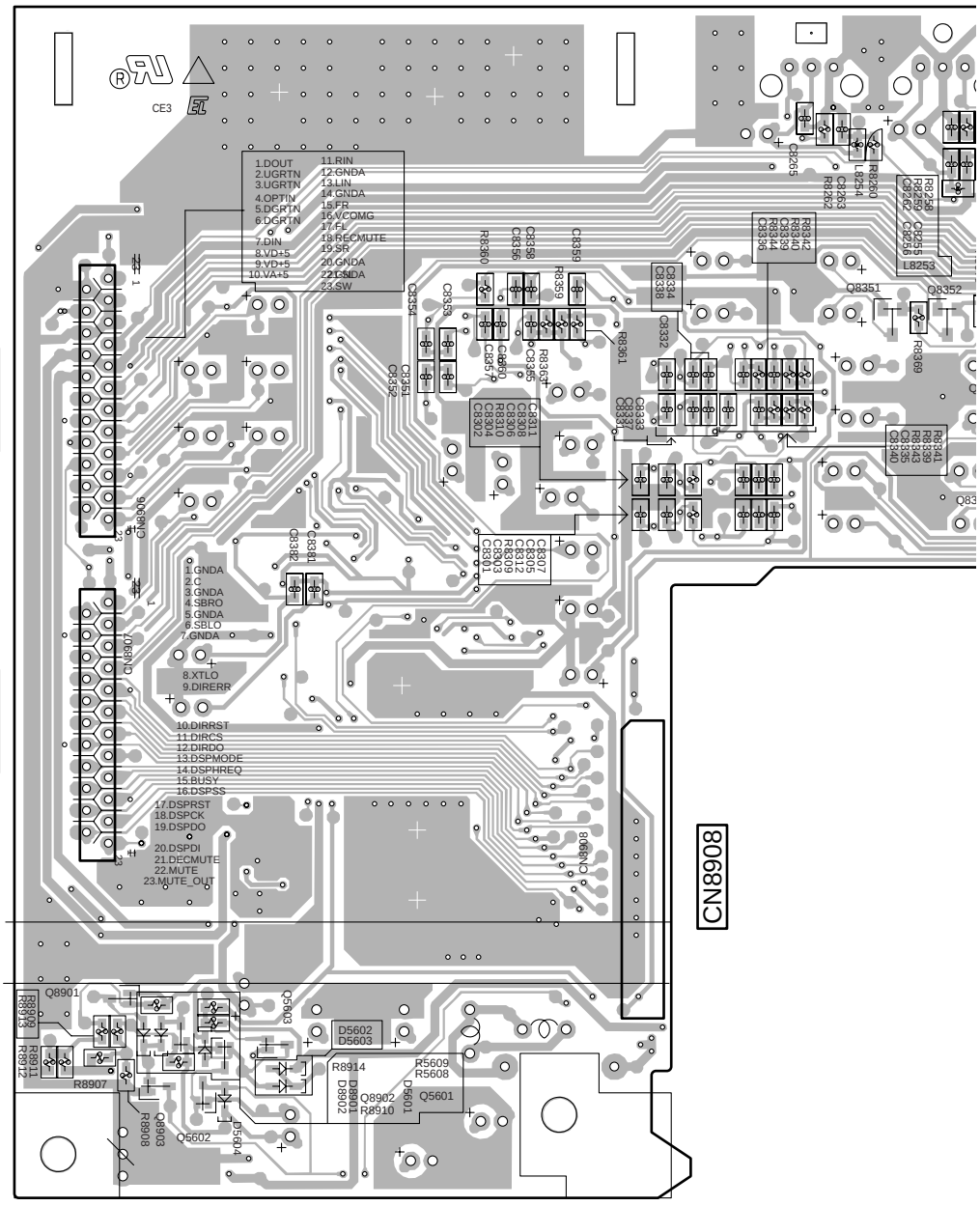
**SIDE B**

## E DSP TRADE ASSY

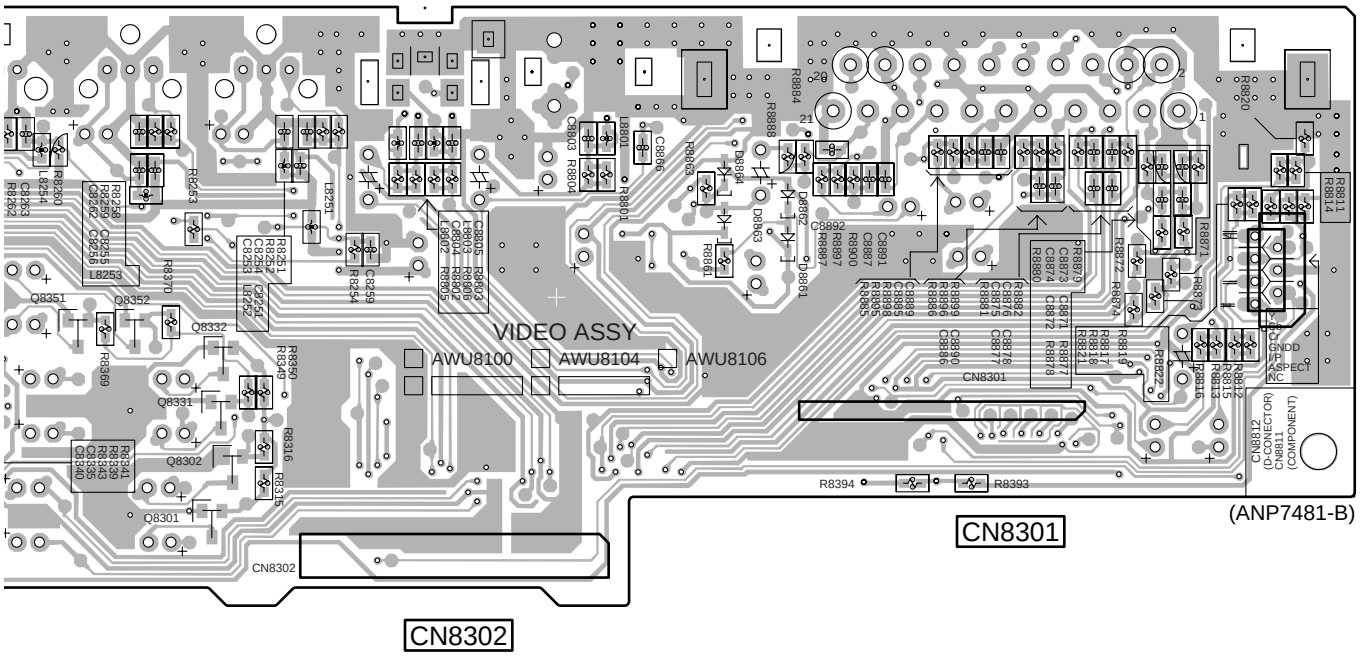



(ANP7481-B)

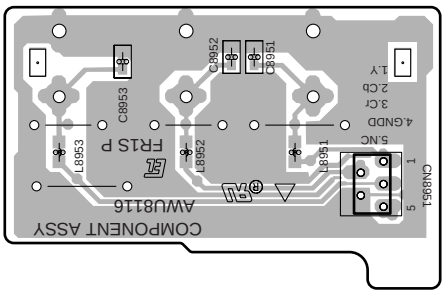
## C VIDEO ASSY



**SIDE B**




## P COMPONENT ASSY



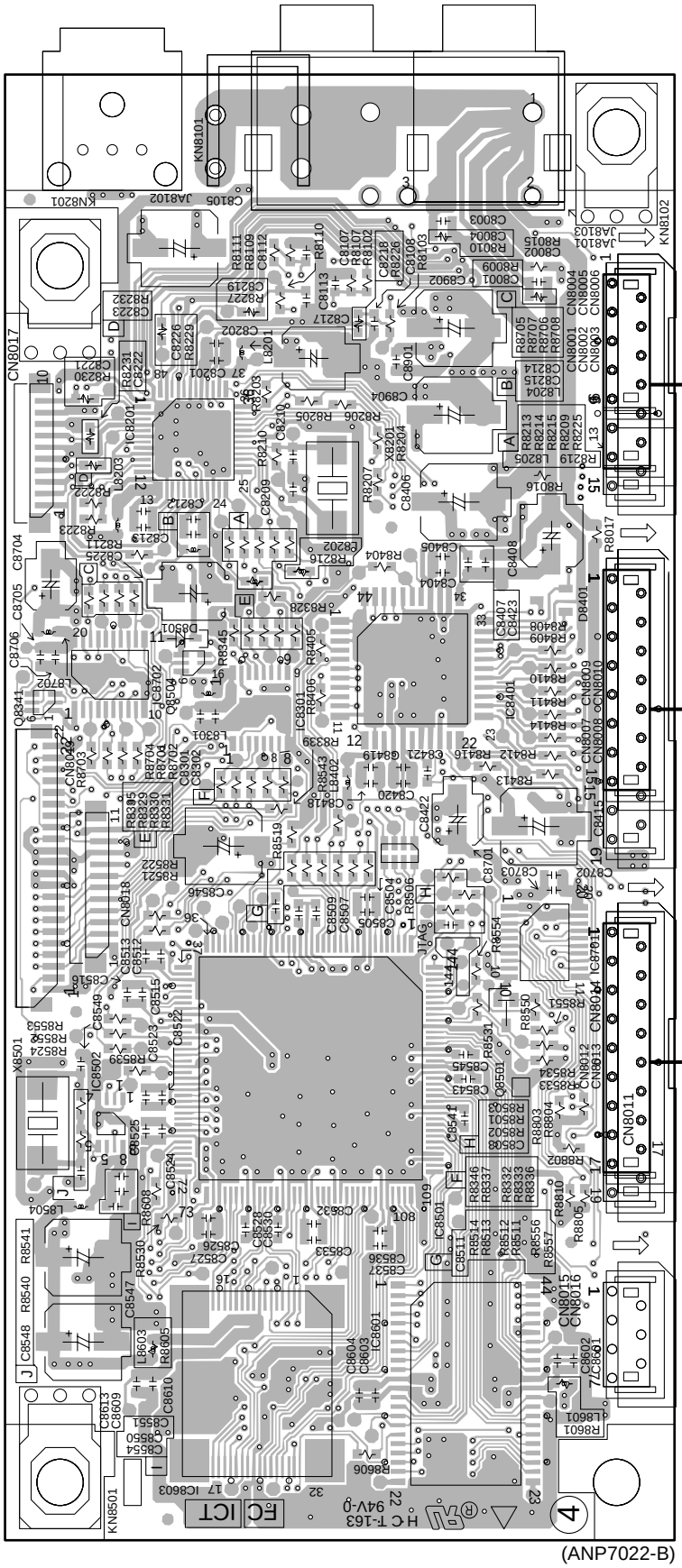

Q8351 Q8352
Q8332
Q8331
Q8302
Q8301

## 4.4 DSP ASSY

SIDE A

SIDE A

D DSP ASSY



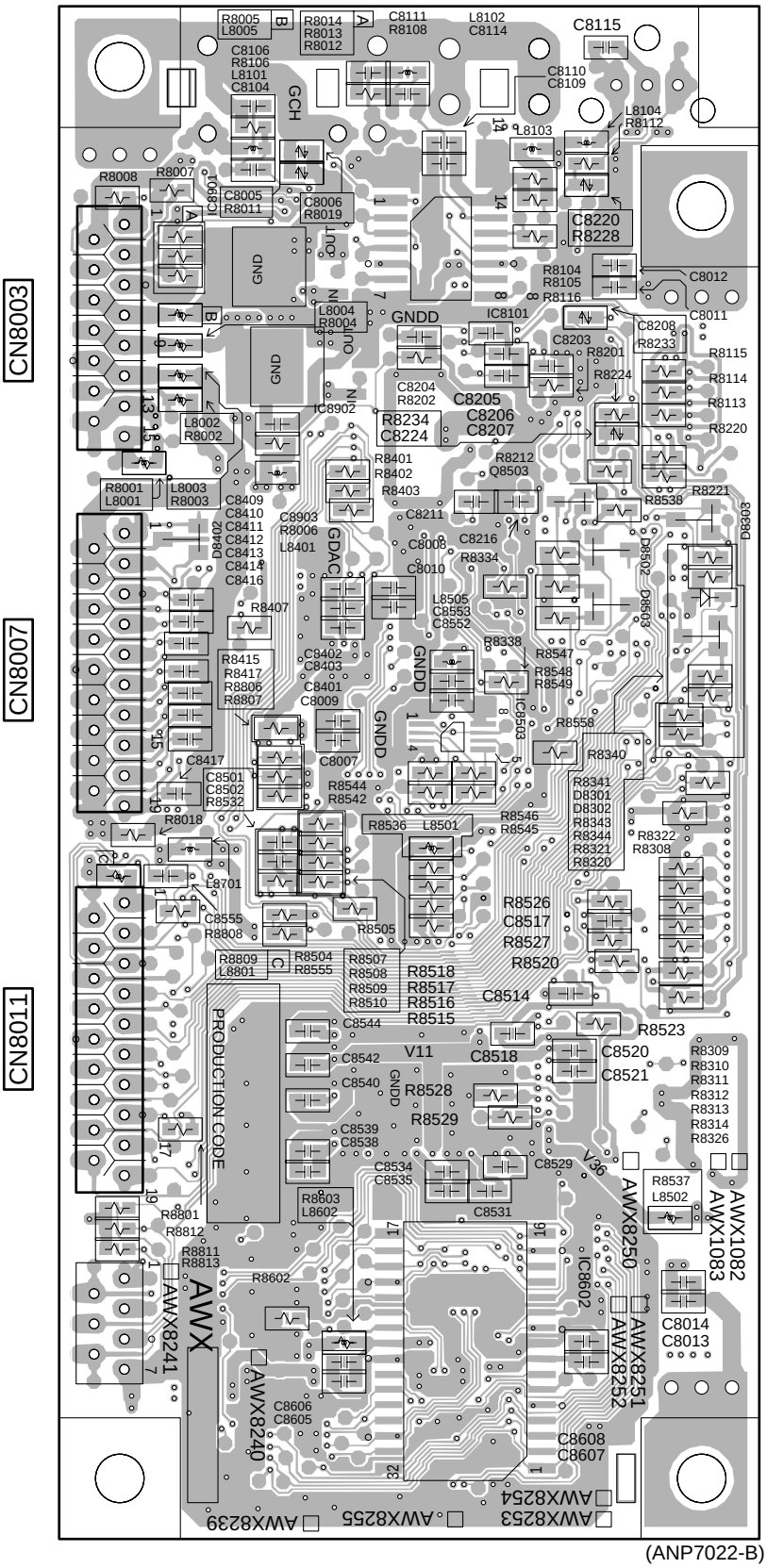

D

D

SIDE B

SIDE B

# D DSP ASSY




(ANP7022-B)

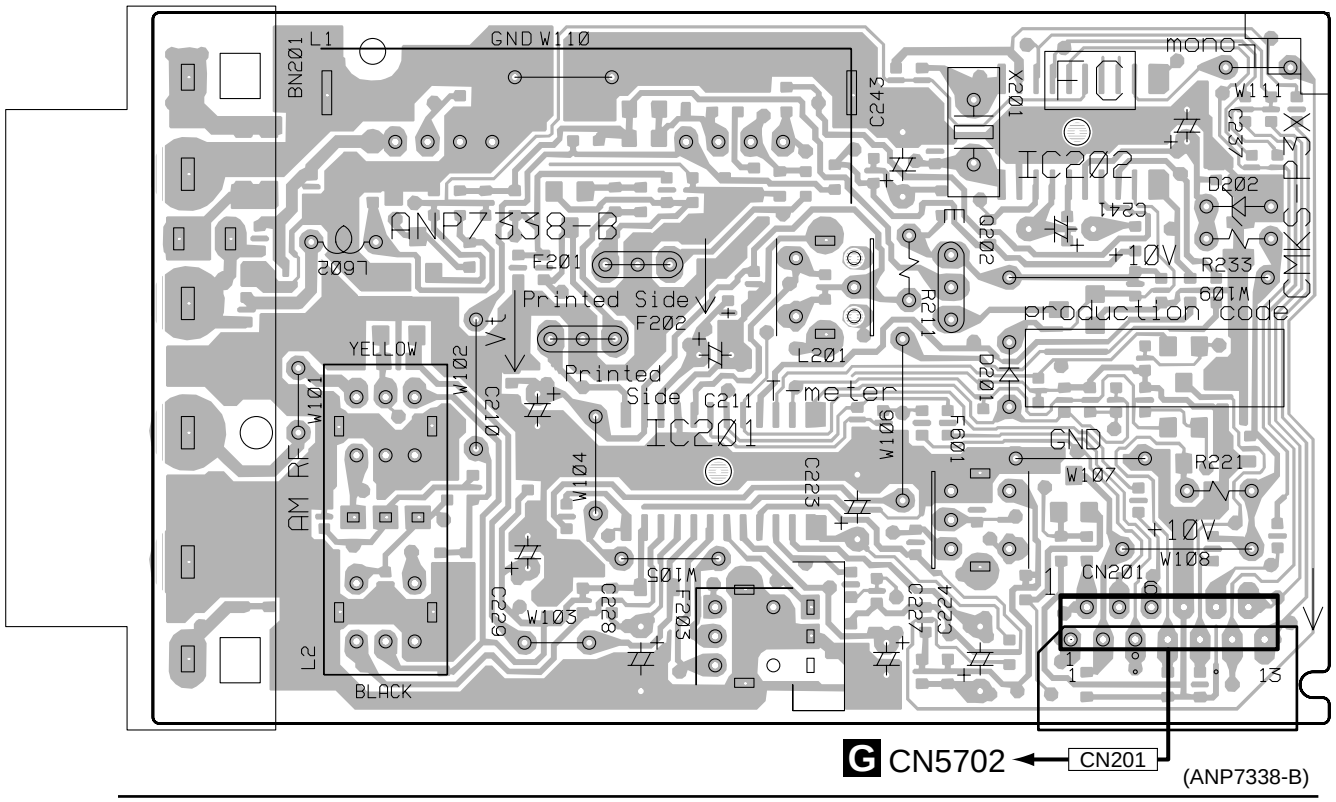
D D

## 4.5 FM/AM TUNER MODULE

**SIDE A**

**SIDE A**

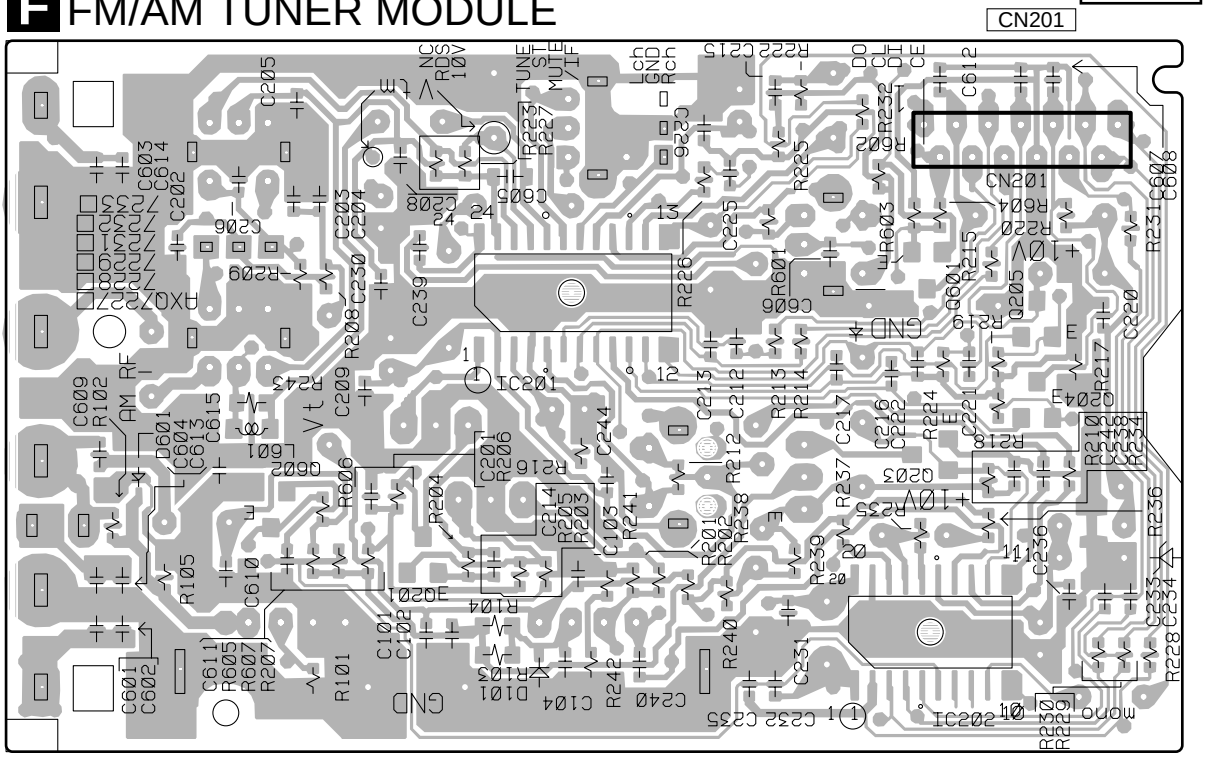
**F** FM/AM TUNER MODULE




**SIDE B**

**SIDE B**

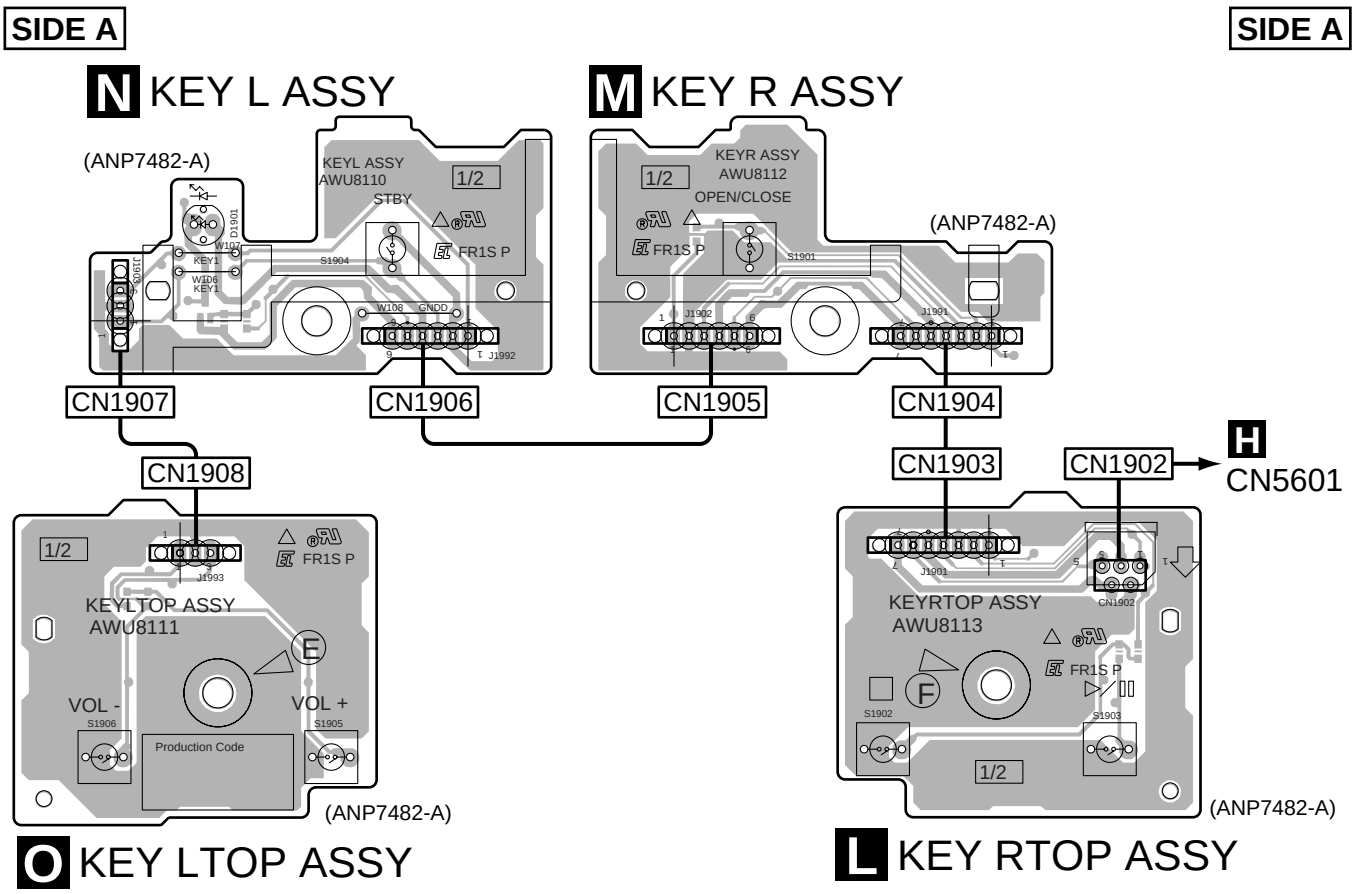
**F** FM/AM TUNER MODULE

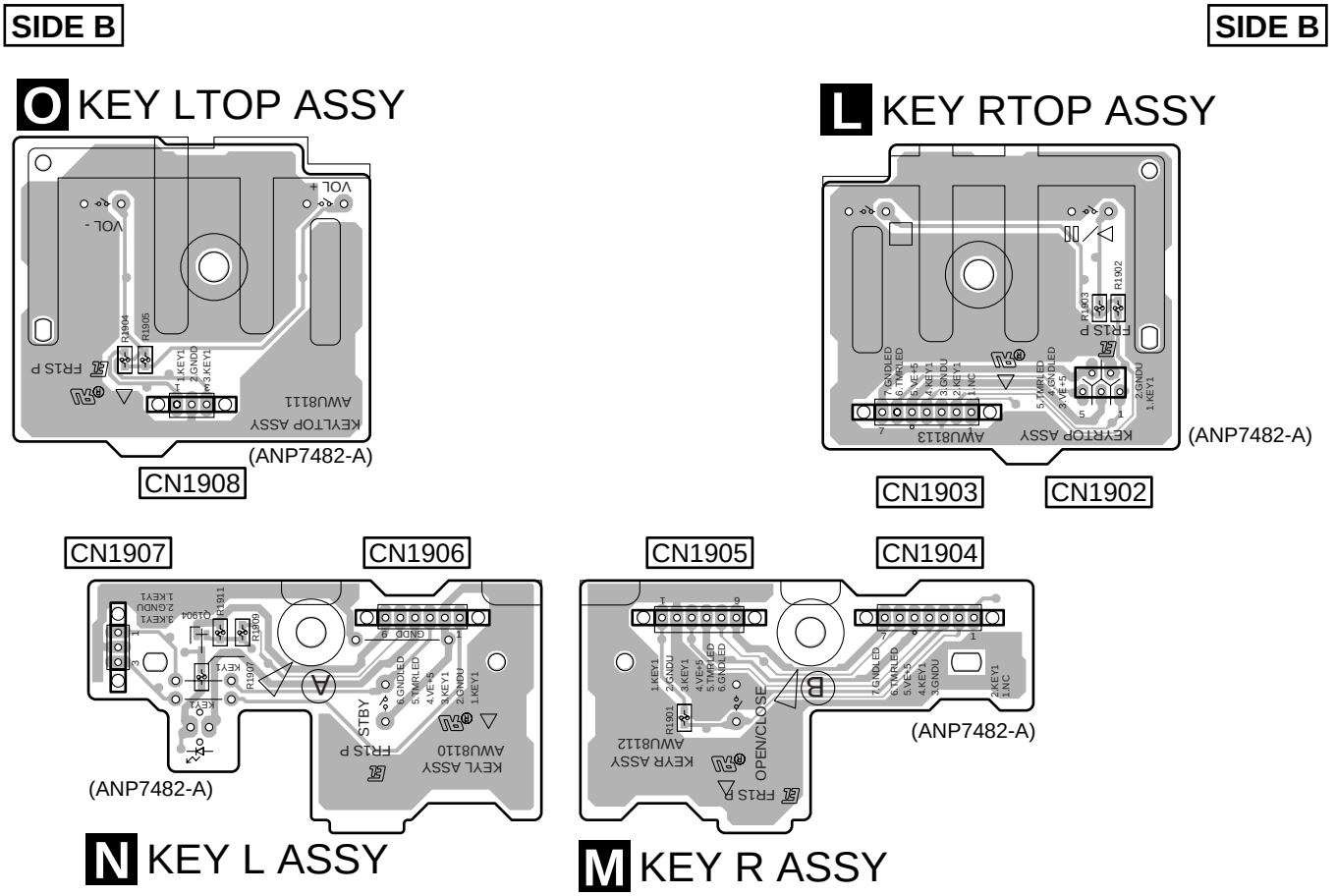



**F**

**F**

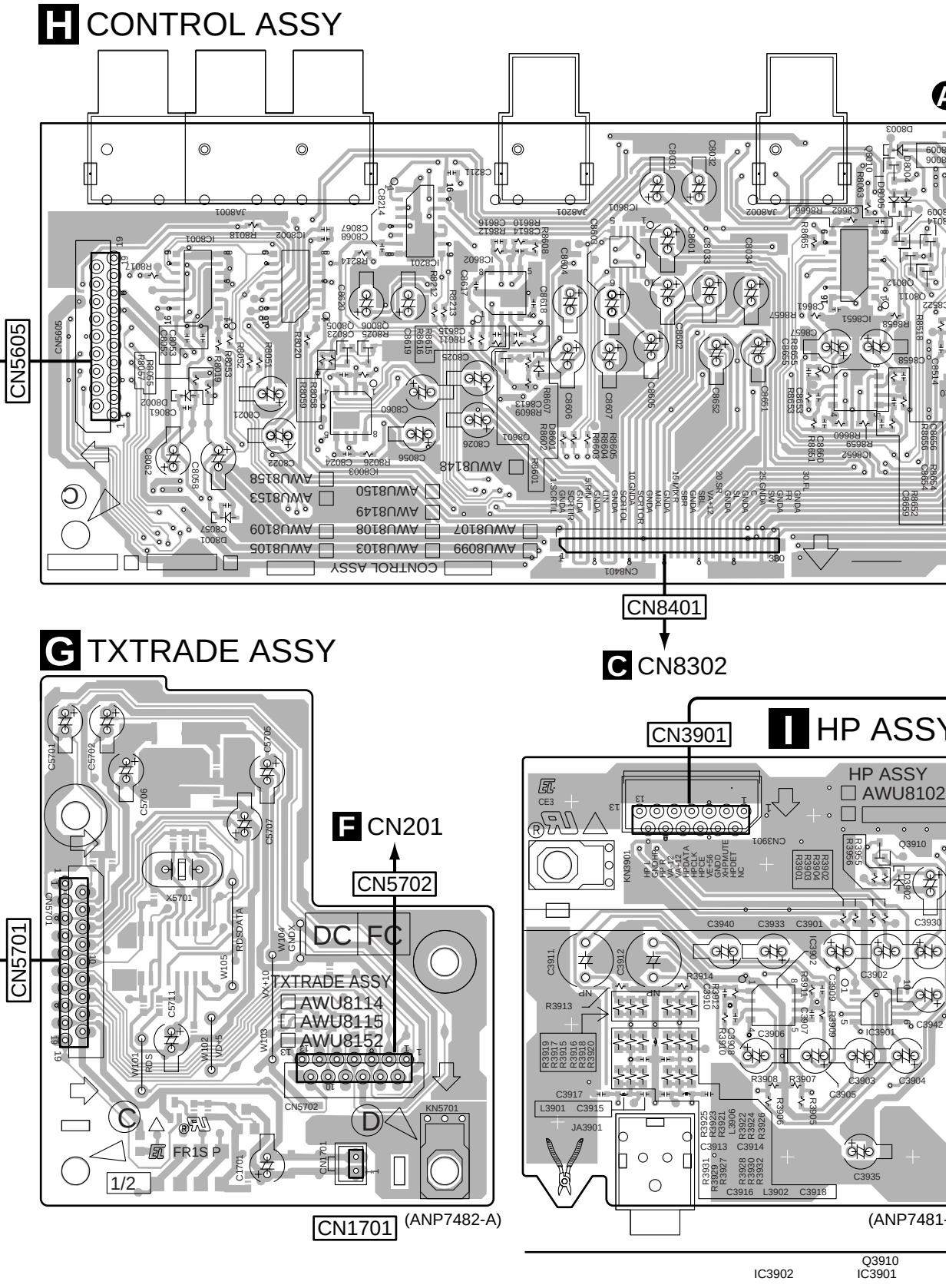
## 4.6 KEY RTOP, KEY R, KEY L and KEY LTOP ASSYS



# 4.7 TXTRADE, CONTROL and HP ASSYS

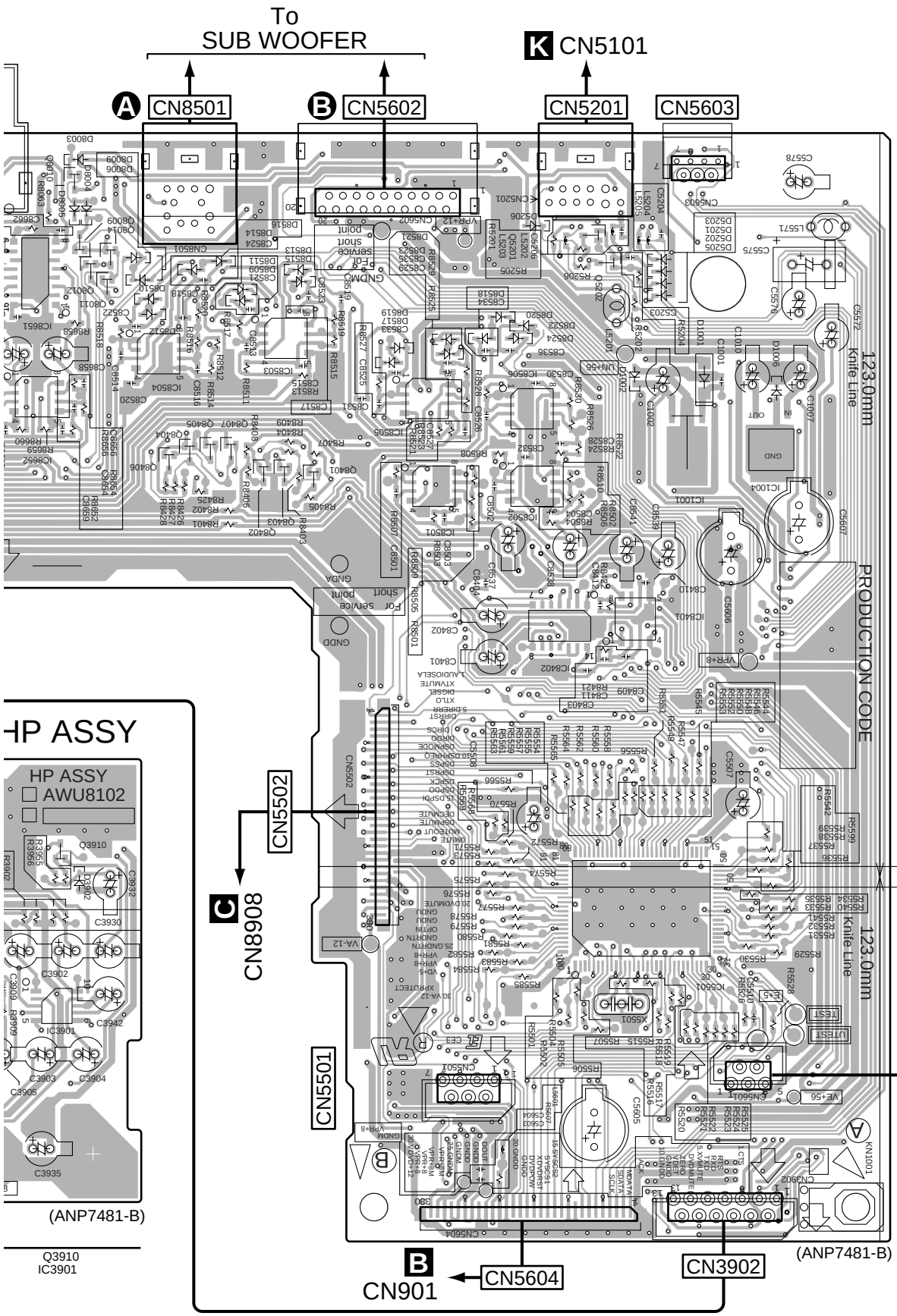
**SIDE A**




IC8001 IC8002 IC8201 IC8602 IC8601 Q8010
Q8005 Q8006 Q8601 IC8651 Q8009 Q8014
IC8003 IC8652 Q8012 Q801

**G H I**

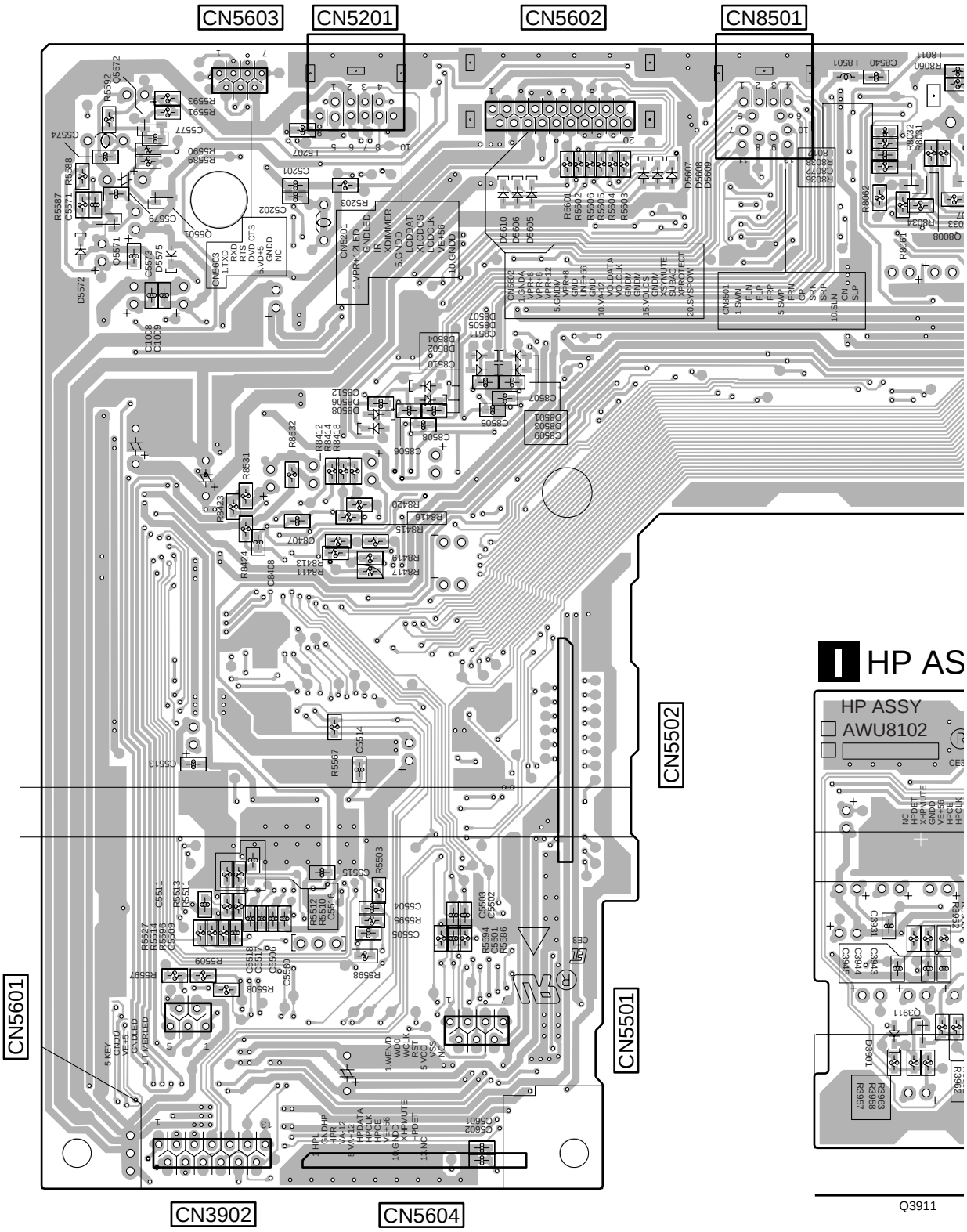
SIDE A



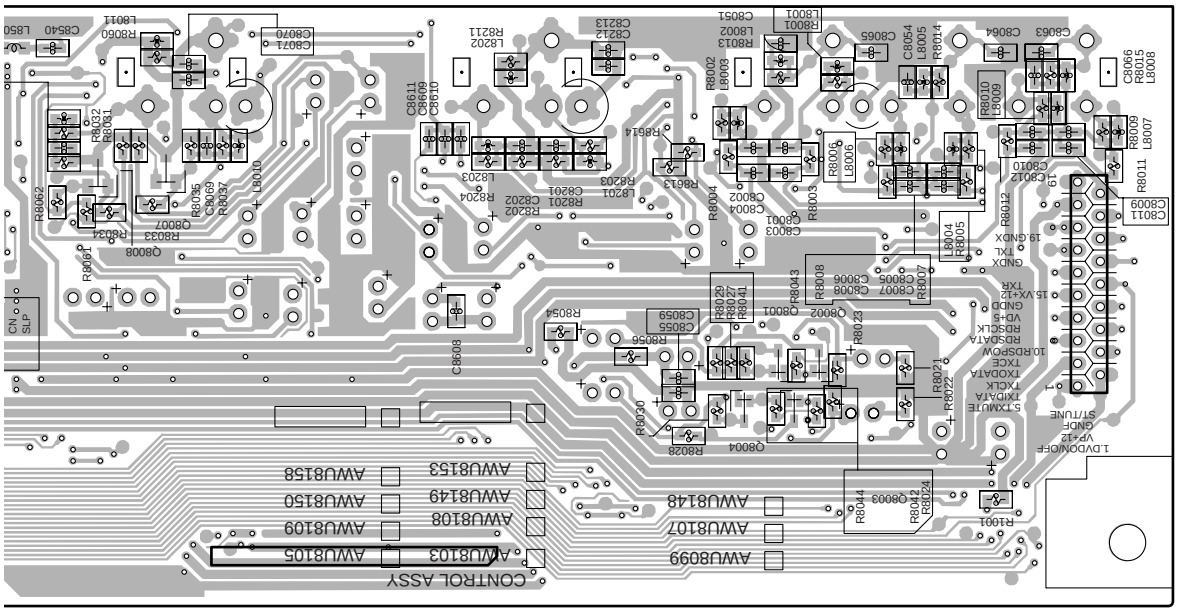

Q8010 IC8503 IC8505 IC8506 Q5201 IC1001 IC1004
IC8651 Q8009 Q8014 IC8504 IC8501 IC8502
IC8652 Q8012 Q8011 Q8404 Q8405 IC8402 IC8401
Q8406 Q8407 Q8402 Q8403 Q8401 IC5501

**SIDE B**

# H CONTROL ASSY



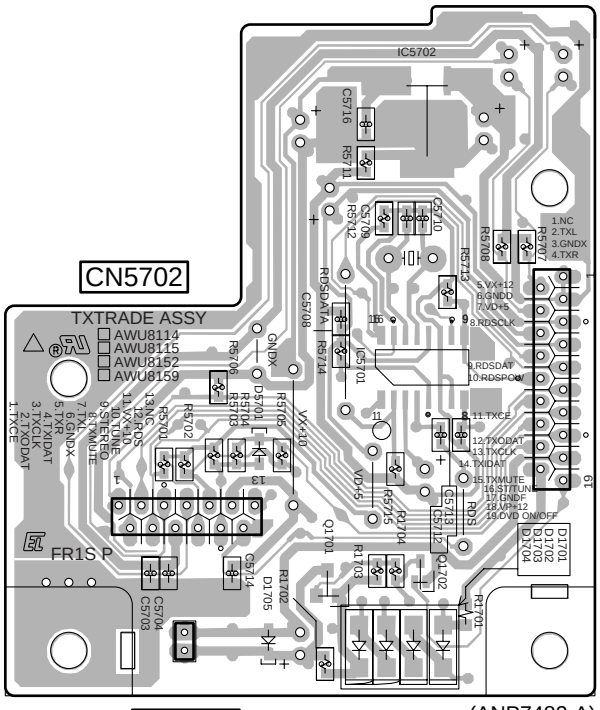
**SIDE B**




CN8401

(ANP7481-B)

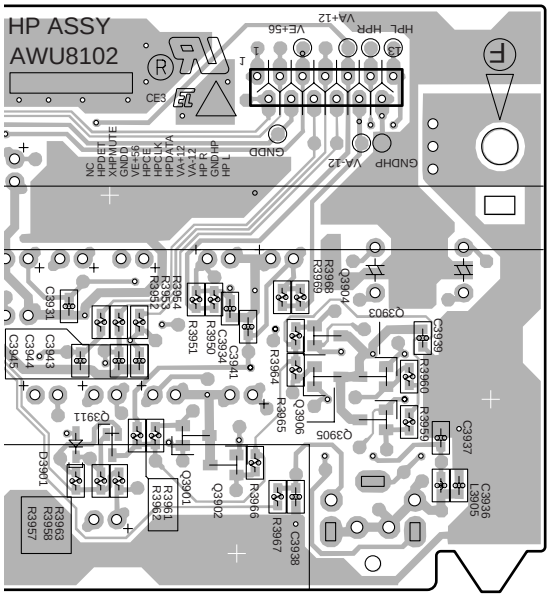
## G TXTRADE ASSY




CN1701

(ANP7482-A)

## I HP ASSY CN3901



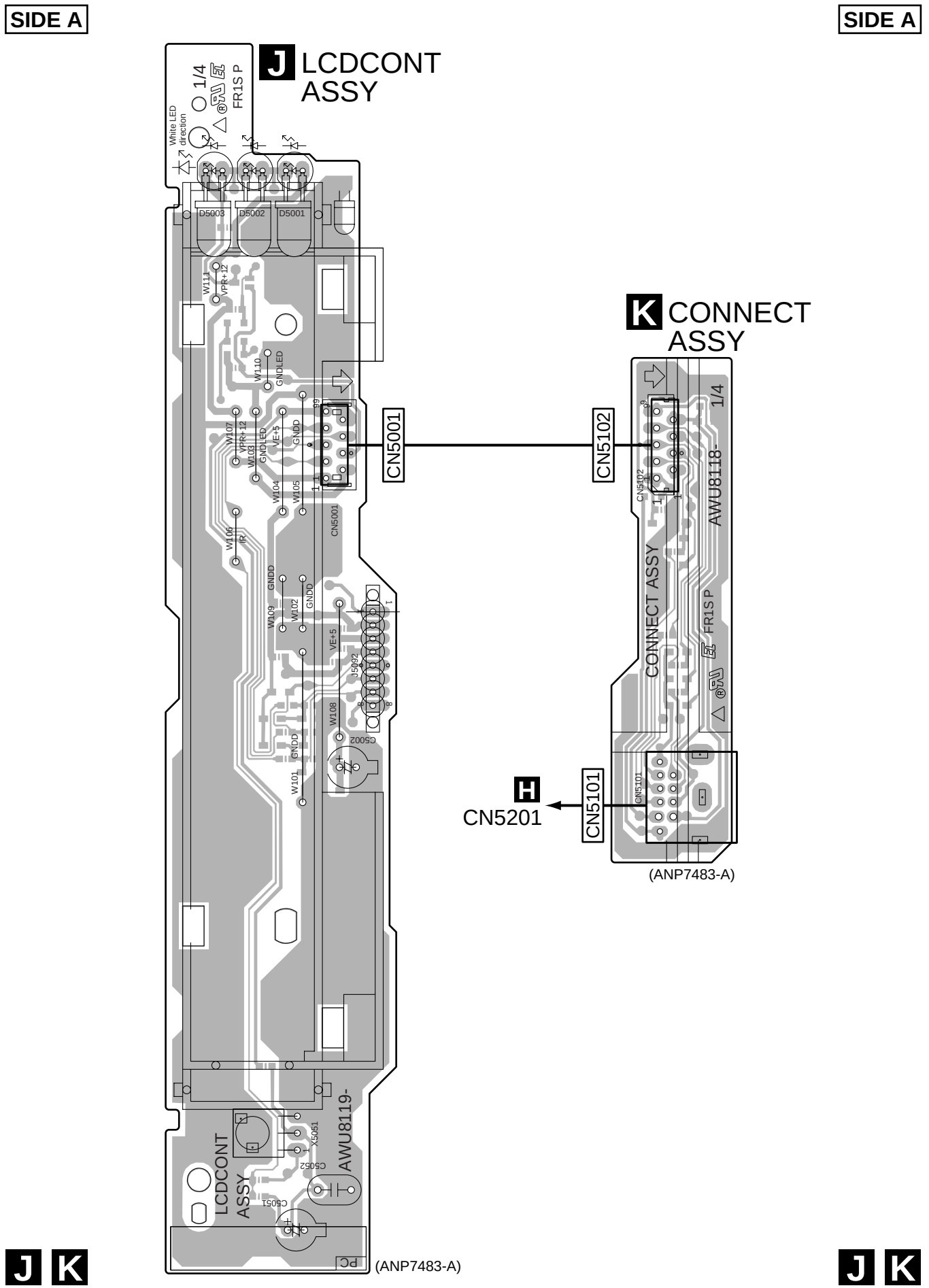

(ANP7481-B)

Q3911 Q3901 Q3904
Q3902 Q3905 Q3903
Q3906 Q3905

Q8008 Q8007

Q8001 Q8002
Q8004 Q8003

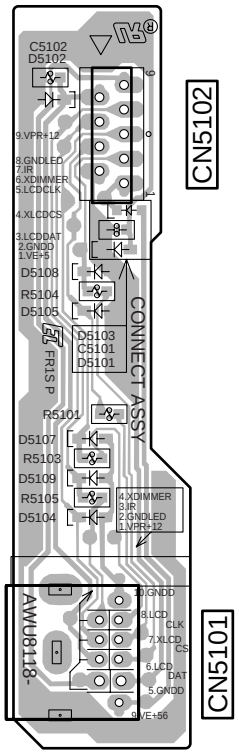
## 4.8 LCDCONT and CONNECT ASSYS



SIDE B

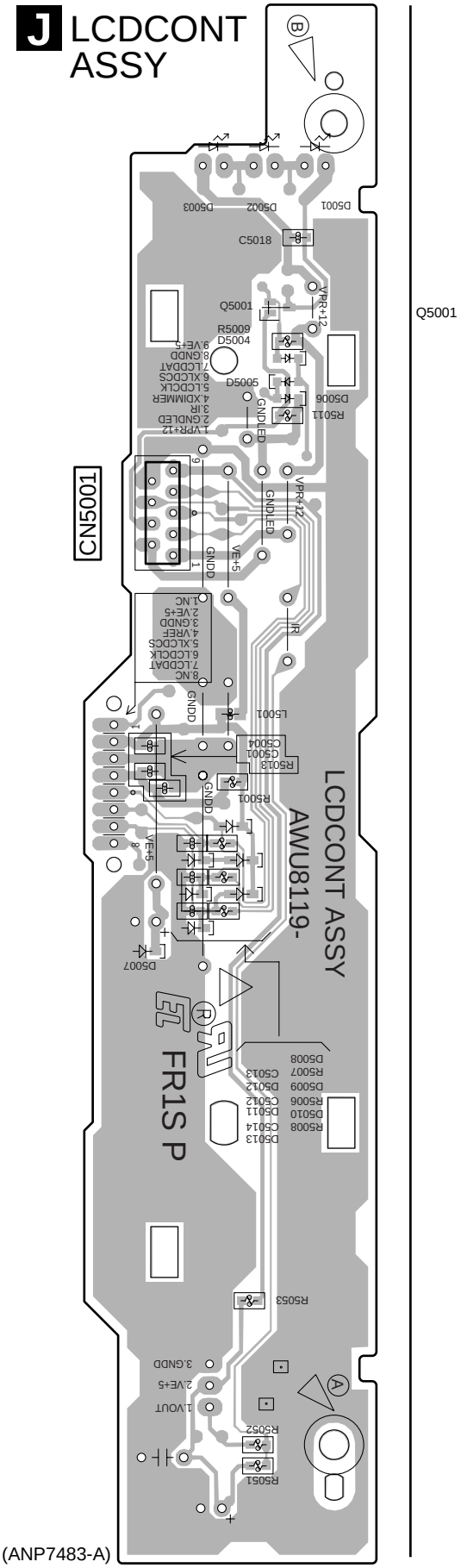
SIDE B

## K CONNECT ASSY




(ANP7483-A)

## J LCDCONT ASSY




(ANP7483-A)

# 5. PCB PARTS LIST

*NOTES:* ● *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
● *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
● *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
*Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).*

*560 Ω → 56 x 10[1] → 561 ..... RD1/4PU 5 6 1 J*
*47k Ω → 47 x 10[3] → 473 ..... RD1/4PU 4 7 3 J*
*0.5 Ω → R50 ..... RN2H R 5 0 K*
*1 Ω → 1R0 ..... RS1P 1 R 0 K*

*Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).*

*5.62k Ω → 562 x 10[1] → 5621 ..... RN1/4PC 5 6 2 1 F*

## LIST OF ASSEMBLIES

| Mark | No. | Description | Part No. |
|---|---|---|---|
| NSP | 1 | ..DVD ASSY | AXA7126 |
| NSP | 2 | ..LOADING MECHA ASSY | VWT1208 |
| NSP | 3 | ..LOAB ASSY | VWG2346 |
| | 2 | ..DVDM ASSY | AWM7813 |
| NSP | 1 | ..DVD COMP ASSY | AWM7845 |
| | 2 | ..VIDEO ASSY | AWU8104 |
| | 2 | ..DSPTRADE ASSY | AWU8101 |
| | 2 | ..CONTROL ASSY | AWU8103 |
| | 2 | ..HP ASSY | AWU8102 |
| | 1 | ..DSP ASSY | AWX8325 |
| | 1 | ..FM/AM TUNER MODULE | AXQ7228 |
| | 1 | ..DISPLAY UNIT | AXX7163 |
| NSP | 2 | ..DISPLAY ASSY | AWM7853 |
| | 3 | ..LCD CONT ASSY | AWU8119 |
| | 3 | ..CONNECT ASSY | AWU8118 |
| NSP | 1 | ..DVD SUB ASSY | AWM7851 |
| | 2 | ..TXTRADE ASSY | AWU8115 |
| | 2 | ..KEY R TOP ASSY | AWU8113 |
| | 2 | ..KEY R ASSY | AWU8112 |
| | 2 | ..KEY L ASSY | AWU8110 |
| | 2 | ..KEY L TOP ASSY | AWU8111 |
| | 2 | ..COMPONENT ASSY | AWU8116 |

| Mark | No. | Description | Part No. |
|---|---|---|---|

## A LOAB ASSY

### SWITCHES AND RELAYS

| | | |
|---|---|---|
| | S101 | VSK1011 |

### OTHERS

| | | |
|---|---|---|
| | CN602 KR CONNECTOR | S2B-PH-K |
| | CN601 KR CONNECTOR | S5B-PH-K |
| | PC BOARD LOAB | VNP1836 |

## B DVDM ASSY

### SEMICONDUCTORS

| | | |
|---|---|---|
| | IC741, IC761, IC781 | BA4558F-HT |
| | IC861, IC871 | DSD1702EG |
| | IC851 | DSD1791DBR |
| | IC602 | K4S281632D-TC75 |
| | IC802 | K4S641632F-TC75 |
| | IC101 | M63018FP |
| ⚠ | IC431 | MM1565AF |
| | IC501 | MM1623AF |
| ⚠ | IC421 | PQ018EH01ZP |
| ⚠ | IC411 | PQ018EZ01ZP |
| ⚠ | IC441 | PQ20WZ11 |
| ⚠ | IC401 | R1224N102H |
| | IC801 | SAA7893HL/C2 |
| | IC601 | STI5588CVB |
| | IC301 | STM6316ATXXA |
| | IC911 | TC74VHC08FT |
| | IC901 | TC74VHCT125AFT |
| | IC807 | TC7SET08FU |
| | IC691 | TC7SU04FU |
| | IC803 | TC7WH34FU |
| | IC604, IC804 | TC7WU04FU |
| | IC603 | VYW2087 |
| | Q390 | 2SA1576A |
| ⚠ | Q451 | 2SA1576A |
| | Q744, Q764, Q923, Q924, Q926 | 2SA1576A |
| | Q202, Q212, Q452 | 2SC4081 |
| | Q741, Q742, Q761, Q762 | 2SD2114K |
| | Q781, Q782 | 2SD2114K |
| ⚠ | Q401 | CPH6314 |
| | 921 | DTA124EUA |
| | Q951 | DTC114TUA |
| | Q722, Q746, Q763, Q977 | DTC114YUA |
| | Q922, Q925 | DTC124EUA |
| | Q201, Q211 | HN1A01F |
| | Q911 | RN1903 |
| | Q603 | RN4982 |
| | D431, D432 | 1SR154-400 |
| | D402, D403, D743, D761, D782 | 1SS355 |
| | D922-D927 | 1SS355 |
| | D401 | RB051L-40 |
| | D603 | RB501V-40 |
| | D921 | UDZS4.7B |
| | D741, D742, D781 | UDZS6.2B |

### COILS AND FILTERS

| | | |
|---|---|---|
| | L401 POWER INDUCTOR | ATH7011 |
| | L402 POWER INDUCTOR | CTH1254 |
| | L413, L414 CHIP BEADS | ATL7010 |
| | L390 | LCYA2R7J2520 |
| | L1056-L1061 CHIP BEADS | VTL1078 |

### CAPACITORS

| | | |
|---|---|---|
| | C408, C747, C748, C751, C752 | CCSRCH121J50 |
| | C390 | CCSRCH180J50 |
| | C142 | CCSRCH221J50 |

| Mark No. | Description | Part No. |
|---|---|---|
| | C765, C766, C785, C786 | CCSRCH270J50 |
| | C200, C763, C764, C783, C784 | CCSRCH331J50 |
| | C690 | CCSRCH470J50 |
| | C755, C756, C773, C774 | CCSRCH471J50 |
| | C793, C794 | CCSRCH471J50 |
| | C392 | CCSRCH560J50 |
| | C393, C640, C644 | CCSRCH7R0D50 |
| | C452, C753, C754, C771, C772 | CEVW100M16 |
| | C791, C792 | CEVW100M16 |
| | C101, C401, C404, C410, C412 | CEVW101M16 |
| | C422, C443, C561, C564, C600 | CEVW101M16 |
| | C750, C797-C799, C809, C851 | CEVW101M16 |
| | C853, C854, C861, C863, C864 | CEVW101M16 |
| | C871, C873, C874 | CEVW101M16 |
| | C415, C425, C621, C660, C812 | CEVW101M4 |
| | C857 | CEVW101M4 |
| | C201, C211 | CEVW470M16 |
| | C761, C762, C781, C782, C867 | CEVW470M6R3 |
| | C877 | CEVW470M6R3 |
| | C406 | CKSQYB104K25 |
| | C431 | CKSQYB105K16 |
| | C433 | CKSQYB225K10 |
| | C127, C128, C381, C562, C563 | CKSRYB102K50 |
| | C624, C802, C810 | CKSRYB102K50 |
| | C112-C114, C124, C125, C130 | CKSRYB103K50 |
| | C133, C134, C355, C805 | CKSRYB103K50 |
| | C102, C132, C139, C300, C307 | CKSRYB104K16 |
| | C309, C315, C318, C323, C326 | CKSRYB104K16 |
| | C335, C342, C348, C357, C362 | CKSRYB104K16 |
| | C373, C377, C388, C391 | CKSRYB104K16 |
| | C413, C414, C423, C424 | CKSRYB104K16 |
| | C441, C442, C451, C511, C531 | CKSRYB104K16 |
| | C551, C565, C571, C604, C607 | CKSRYB104K16 |
| | C614, C619, C622, C623 | CKSRYB104K16 |
| | C626-C632, C636, C637, C641 | CKSRYB104K16 |
| | C647-C649, C659, C664, C671 | CKSRYB104K16 |
| | C681, C684, C691, C694, C698 | CKSRYB104K16 |
| | C741, C742, C749, C767-C769 | CKSRYB104K16 |
| | C787-C789, C801, C803, C804 | CKSRYB104K16 |
| | C806-C808, C811, C813-C826 | CKSRYB104K16 |
| | C829, C852, C855, C856 | CKSRYB104K16 |
| | C858, C859, C862, C865, C866 | CKSRYB104K16 |
| | C872, C875, C876, C902, C912 | CKSRYB104K16 |
| | C921 | CKSRYB104K16 |
| | C230, C232, C233, C501, C521 | CKSRYB105K10 |
| | C541, C603, C620, C625 | CKSRYB105K10 |
| | C757, C758, C795 | CKSRYB105K10 |
| | C394, C743-C746 | CKSRYB152K50 |
| | C126, C346 | CKSRYB223K50 |
| | C202, C205, C212, C215 | CKSRYB472K50 |
| | C402, C403, C405, C409 (10µF/16V) | DCH1165 |

**RESISTORS**

| | | |
|---|---|---|
| | R824, R825, R836-R838 | RAB4C0R0J |
| | R201 | RAB4C220J |
| | R211 | RAB4C390J |
| | R100, R1011-R1013, R1069, R111 | RS1/10S0R0J |
| | R210, R387-R389, R412, R415 | RS1/10S0R0J |
| | R417, R421, R422, R483, R485 | RS1/10S0R0J |
| | R561, R600, R623, R840, R884 | RS1/10S0R0J |
| | R403 | RS1/10S100J |
| | R105, R106, R115-R120 | RS1/10S4R7J |
| | R104, R107 | RS1/10S6R8J |
| | R125, R144, R330, R331, R628 | RS1/16S1002F |
| | R635, R761-R764, R781-R784 | RS1/16S1002F |
| | R301 | RS1/16S1202F |
| | R502, R512, R522, R532, R542 | RS1/16S1500F |
| | R552 | RS1/16S1500F |
| | R408 | RS1/16S1502F |
| | R410 | RS1/16S1802F |
| | R443 | RS1/16S2001F |
| | R741-R746, R751, R752 | RS1/16S2201F |
| | R409 | RS1/16S2702F |
| | R441 | RS1/16S4701F |
| | R101, R102, R123, R142, R143 | RS1/16S5600F |
| | R442 | RS1/16S6801F |
| | R411 | RS1/8S0R0J |
| | Other Resistors | RS1/16S###J |

**OTHERS**

| | | |
|---|---|---|
| | CN104 4P CONNECTOR | AKN7035 |
| | CN105 12P FFC CONNECTOR | RKN1053 |
| | CN103 CONNECTOR | S5B-PH-SM3 |
| | FLEXIBLE CABLE | VDA1681 |
| | CN901, CN943 30P FFC CONNECTOR | VKN1322 |
| | CN101 0.5-24P CONNECTOR | VKN1482 |
| | X601 (27MHz) | VSS1172 |
| | X301 (20MHz) | VSS1186 |

## C VIDEO ASSY

**SEMICONDUCTORS**

| | | |
|---|---|---|
| | IC5601 | AEK7065 |
| | IC1002, IC1003 | BA05FP |
| | IC8301-IC8303 | BA4558F-HT |
| | IC8381, IC8382 | BU4053BCF |
| | IC8251 | TC74HC00AF |
| | Q8901, Q8902 | 2SA1576A |
| | Q8301, Q8302, Q8331, Q8332 | 2SD2114K |
| | Q8351, Q8352 | 2SD2114K |
| | Q5601, Q8321, Q8382, Q8383 | UN5112 |
| | Q5602, Q5603, Q8381, Q8903 | UN5212 |
| | D1004 | 1SR154-400 |
| | D5601-D5604, D8382, D8383 | 1SS355 |
| | D8901, D8902 | 1SS355 |
| | D8391, D8392 | UDZS6.8B |

**COILS AND FILTERS**

| | | |
|---|---|---|
| | L8251-L8254 CHIP BEADS | VTL1076 |

**CAPACITORS**

| | | |
|---|---|---|
| | C8803-C8805 | CCSRCH470J50 |
| | C8307, C8308 | CCSRCH680J50 |
| | C8303, C8304 | CCSRCH681J50 |
| | C8337, C8338, C8357 | CCSRCH821J50 |
| | C8313-C8316, C8341-C8344 | CEAT100M50 |
| | C8361-C8364 | CEAT100M50 |
| | C8252, C8257, C8260, C8264 | CEAT101M16 |
| | C8801, C8802, C8811 | CEAT102M6R3 |
| | C8812, C8813 | CEAT471M6R3 |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| | C8383-C8388, C8391, C8392 | | CEJQ100M16 |
| | C8901-C8906 | | CEJQ100M16 |
| | C1004, C1006, C8309, C8310 | | CEJQ470M16 |
| | C8258, C8261, C8311, C8312 | | CKSRYB103K50 |
| | C8339, C8340, C8359, C8360 | | CKSRYB103K50 |
| | C8381, C8382 | | CKSRYB103K50 |
| | C1003, C1005, C8251, C8253 | | CKSRYB104K25 |
| | C8255, C8256 | | CKSRYB104K25 |
| | C8331-C8334, C8351, C8353 | | CKSRYB152K50 |
| | C8354 | | CKSRYB224K10 |
| | C8263, C8265 | | CKSRYB473K50 |
| | C8358 | | CKSRYB562K50 |

**RESISTORS**

| | | |
|---|---|---|
| | R8801-R8803, R8811-R8813 | RS1/16S75R0F |
| | Other Resistors | RS1/16S###J |

**OTHERS**

| | | |
|---|---|---|
| | CN8811 15P FFC CONNECTOR | 52045-0545 |
| | CN8802 4P MINI JACK | AKP7045 |
| | CN8906, CN8907 23P PLUG | AKP7064 |
| | JA8253 OPT. LINK OUT | GP1FA502TZ |
| | JA8251, JA8252 OPT. LINK IN | GP1FA512RZB |
| | 8901 PCB BINDER | VEF1040 |
| | JA8801 1P PIN JACK | VKB1122 |
| | CN8302, CN8908 30P FFC CONNECTOR | VKN1322 |
| | CN8301 30P FFC CONNECTOR | VKN1434 |

## D DSP ASSY

**SEMICONDUCTORS**

| | | |
|---|---|---|
| | IC8201 | AK4114VQ |
| | IC8401 | AK4628VQ |
| | IC8501 | DSPD56367PV150 |
| | IC8901 | NJM2391DL1-33 |
| | IC8902 | NJU7223DL1-18 |
| | IC8701 | TC74LVX244FT |
| | IC8702 | TC74VHCT244AFT |
| | IC8502 | TC7WU04FU |
| | Q8504 | UMD2N |
| | Q8503 | UN5112 |
| | D8501 | 1SS355 |
| | D8401 | DAN202K |
| | D8402, D8502, D8503 | DAP202K |

**COILS AND FILTERS**

| | | |
|---|---|---|
| | L8002, L8004, L8501, L8502 | ATL7002 |
| | L8201, L8203, L8204, L8401, L8402 | QTL1013 |
| | L8504, L8701, L8702 | QTL1013 |

**CAPACITORS**

| | | |
|---|---|---|
| | C8209, C8210 | CCSRCH100D50 |
| | C8421 | CCSRCH101J50 |
| | C8007, C8008, C8201, C8212, C8214 | CCSRCH471J50 |
| | C8404, C8409-C8414, C8416, C8417 | CCSRCH471J50 |
| | C8419, C8505, C8507, C8509 | CCSRCH471J50 |
| | C8511, C8512, C8515, C8518, C8520 | CCSRCH471J50 |
| | C8522, C8524, C8526, C8528, C8530 | CCSRCH471J50 |
| | C8532, C8534, C8536, C8539, C8541 | CCSRCH471J50 |
| | C8543, C8545, C8551, C8703, C8706 | CCSRCH471J50 |
| | C8548, C8549 | CCSRCH8R0D50 |
| | C8701, C8704 | CEV100M16 |
| | C8406, C8415, C8546, C8547, C8902 | CEV101M16 |
| | C8904 | CEV101M16 |
| | C8217, C8225, C8408 | CEV470M6R3 |
| | C8204, C8555 | CKSRYB102K50 |
| | C8009, C8405, C8418, C8517, C8554 | CKSRYB103K50 |
| | C8003, C8005, C8010, C8202, C8207 | CKSRYB104K16 |
| | C8213, C8215, C8407, C8420, C8422 | CKSRYB104K16 |
| | C8504, C8513, C8521, C8523, C8525 | CKSRYB104K16 |
| | C8527, C8529, C8531, C8533, C8535 | CKSRYB104K16 |
| | C8537, C8538, C8540, C8542, C8544 | CKSRYB104K16 |
| | C8550, C8702, C8705, C8901, C8903 | CKSRYB104K16 |
| | C8516 | CKSRYB105K6R3 |
| | C8514 | CKSRYB333K16 |
| | C8203 | CKSRYB473K50 |

**RESISTORS**

| | | |
|---|---|---|
| | R8506 | RAB4C101J |
| | R8201 | RS1/16S1802F |
| | Other Resistors | RS1/16S###J |

**OTHERS**

| | | |
|---|---|---|
| | X8501 (27MHz) | VSS1171 |
| | X8201 (24.576MHz) | XSS3003 |
| | CN8003 13P SOCKET | AKP7070 |
| | CN8007, CN8011 19P SOCKET | AKP7073 |
| | KN8102 WRAPPING TERMINAL | VNF1084 |

## E DSPTRADE ASSY

**CAPACITORS**

| | | |
|---|---|---|
| | C8907 | CKSRYB104K16 |

**OTHERS**

| | | |
|---|---|---|
| | CN8901 13P PLUG | AKP7059 |
| | CN8902, CN8903 19P PLUG | AKP7062 |
| | CN8904, CN8905 23P SOCKET | AKP7178 |

## F FM/TUNER MODULE

**SEMICONDUCTORS**

| | | |
|---|---|---|
| | IC201 | BA1451F |
| | IC202 | LC72131MD |
| | Q201,Q204,Q205 | 2SC2412K |
| | Q202 | DTA124ES |
| | Q203 | DTC124EK |
| | D201 | 1SS133 |
| | D202 | MTZJ5.1C |

**COILS AND FILTERS**

| | | |
|---|---|---|
| | L201 FM DETECTOR COIL | ATE7003 |
| | F202 FM CERAMIC FILTER | ATF-107 |
| | F201 FM CERAMIC FILTER | ATF-119 |
| | F203 AM CERAMIC FILTER | ATF1155 |

**CAPACITORS**

| | | |
|---|---|---|
| | C206 | CCSRCH100D50 |
| | C212,C213,C226,C233-C235 | CCSRCH101J50 |
| | C240 | CCSRCH101J50 |
| | C231,C232 | CCSRCH150J50 |
| | C223 | CEAT100M50 |
| | C229 | CEAT101M10 |

| Mark No. | Description | Part No. |
|---|---|---|
| C224 | | CEAT1R0M50 |
| C227 | | CEAT220M25 |
| C241 | | CEAT2R2M50 |
| C243 | | CEAT330M16 |
| C228 | | CEAT3R3M50 |
| C237 | | CEAT470M10 |
| C211 | | CEJA1R0M50 |
| C210 | | CEJA470M16 |
| C204,C238,C602 | | CKSRYB102K50 |
| C101,C102,C208,C220,C239 | | CKSRYB103K50 |
| C242,C601 | | CKSRYB103K50 |
| C216,C217 | | CKSRYB123K50 |
| C225 | | CKSRYB153K50 |
| C201,C205,C209,C214,C230 | | CKSRYB223K50 |
| C236,C603 | | CKSRYB223K50 |
| C221 | | CKSRYB224K10 |
| C202,C222 | | CKSRYB473K16 |
| C215 | | CKSRYB681K50 |

**RESISTORS**

| | | |
|---|---|---|
| R211 | | RD1/4PU221J |
| R221 | | RD1/4PU222J |
| R233 | | RD1/4PU391J |
| R243 | | RS1/10S0R0J |
| R103 | | RS1/10S331J |
| R104 | | RS1/10S391J |
| Other Resistors | | RS1/16S###J |

**OTHERS**

| | | |
|---|---|---|
| CN201 | 13P FFC CONNECTOR | 52044-1345 |
| BN201 | 4P ANTENNA TERMINAL | AKA7003 |
| | SHIELD CASE T | ANK7072 |
| | SHIELD CASE B | ANK7073 |
| X201 | CRYSTAL RESONATOR (7.2MHz) | ASS1093 |

## G TXTRDE ASSY

**SEMICONDUCTORS**

| | | |
|---|---|---|
| IC5702 | | BA10FP |
| D5701 | | 1SS355 |

**CAPACITORS**

| | | |
|---|---|---|
| C5701, C5702, C5706 | | CEAT100M50 |
| C5705, C5707 | | CEAT470M16 |
| C5708 | | CKSRYB103K50 |
| C5703, C5704, C5716 | | CKSRYB104K16 |

**RESISTORS**

| | | |
|---|---|---|
| Other Resistors | | RS1/16S###J |

**OTHERS**

| | | |
|---|---|---|
| CN5702 | 13P FFC CONNECTOR | 52045-1345 |
| CN5701 | 19P FFC CONNECTOR | 52045-1945 |
| KN5701 | WRAPPING TERMINAL | VNF1084 |

## H CONTROL ASSY

**SEMICONDUCTORS**

| | | |
|---|---|---|
| IC1001 | | BA12FP |
| IC8003, IC8401, IC8501-IC8506, IC8652 | | BA4558F-HT |
| IC8001, IC8002 | | BU4051BCF |
| IC8651 | | BU4052BCF |
| IC8402 | | BU4066BCF |
| IC1004 | | NJM7805DL1A |
| IC5501 | | PDC110B |
| Q5201, Q5202, Q5501, Q5572 | | 2SC4081 |
| Q8001-Q8004, Q8401, Q8402 | | 2SC4081 |
| Q8007, Q8008 | | 2SD2114K |
| Q8005, Q8006, Q8010-Q8012 | | UN5112 |
| Q8403, Q8404, Q8406 | | UN5112 |
| Q8009, Q8014, Q8405, Q8407 | | UN5212 |
| Q5571 | | UN521L |
| D1001 | | 1SR154-400 |
| D1006, D5575, D8003-D8006, D8009 | | 1SS355 |
| D8001, D8002 | | UDZS6.8B |
| D5201-D5203, D5205, D5206 | | UDZS8.2B |
| D5605-D5610 | | UDZS8.2B |

**COILS AND FILTERS**

| | | |
|---|---|---|
| L5571 | INDUCTOR | LFEA220J |
| L5601 | CHIP BEADS | VTL1075 |

**CAPACITORS**

| | | |
|---|---|---|
| C5575 (0.047F/5.5V) | | ACH1246 |
| C5203, C5204, C5505, C5510, C5511 | | CCSRCH101J50 |
| C5577, C8069, C8072 | | CCSRCH101J50 |
| C8001-C8012 | | CCSRCH221J50 |
| C1007, C1010, C5576, C8021, C8022 | | CEAT100M50 |
| C8025, C8026, C8031, C8032 | | CEAT100M50 |
| C8401, C8402, C8537, C8538 | | CEAT100M50 |
| C8651, C8652, C8657, C8658 | | CEAT100M50 |
| C5507, C5508, C5572, C8539, C8541 | | CEAT101M16 |
| C5606 | | CEAT102M10 |
| C5578 | | CEAT1R0M50 |
| C5605 | | CEAT222M10 |
| C1002, C8056, C8058, C8060, C8062 | | CEAT470M16 |
| C5504 | | CKSRYB102K50 |
| C1008, C1009, C5506, C5517, C5518 | | CKSRYB103K50 |
| C5571, C5573, C5580, C8055, C8057 | | CKSRYB103K50 |
| C8059, C8061, C8403, C8404 | | CKSRYB103K50 |
| C8407, C8408, C8505-C8512 | | CKSRYB103K50 |
| C8517-C8524, C8529-C8536, C8540 | | CKSRYB103K50 |
| C8659, C8660 | | CKSRYB103K50 |
| C1001, C5513-C5516, C5574 | | CKSRYB104K16 |
| C8063-C8065, C8070, C8661, C8662 | | CKSRYB104K16 |

**RESISTORS**

| | | |
|---|---|---|
| R8501, R8502, R8505, R8506 | | RS1/16S1002F |
| R8511, R8512, R8515, R8516 | | RS1/16S1002F |
| R8521, R8522, R8525, R8526 | | RS1/16S1002F |
| Other Resistors | | RS1/16S###J |

**OTHERS**

| | | |
|---|---|---|
| X5501 (10MHz) | | ASS7034 |
| CN5601 | 5P FFC CONNECTOR | 52045-0545 |
| CN5501 | 7P FFC CONNECTOR | 52045-0745 |
| CN3902 | 13P FFC CONNECTOR | 52045-1345 |
| CN5605 | 19P FFC CONNECTOR | 52045-1945 |
| 8001 | 6P PIN JACK | AKB7012 |
| CN5602 | 20P SOCKET | AKP7129 |
| CN8501 | 12P CONNECTOR | AKP7131 |
| CN5201 | 10P CONNECTOR | AKP7134 |
| JA8002 | 2P PIN JACK | RKB1041 |

| Mark No. | Description | Part No. |
|---|---|---|
| | CN5603 7P FFC CONNECTOR | VKN1267 |
| | CN5502, CN5604, CN8401 30P FFC CONNECTOR | VKN1434 |
| | KN1001 WRAPPING TERMINAL | VNF1084 |

## I HP ASSY

### SEMICONDUCTORS

| | | |
|---|---|---|
| | IC3901 | LC75344M |
| | IC3902 | NJM4560M |
| | Q3911 | 2SA1576A |
| | Q3910 | 2SC4081 |
| | Q3903-Q3906 | 2SD2114K |
| | D3901 | 1SS355 |
| | D3902 | UDZS11B |

### CAPACITORS

| | | |
|---|---|---|
| | C3909, C3910 | CCSRCH101J50 |
| | C3907, C3908 | CCSRCH470J50 |
| | C3901-C3904, C3930, C3932, C3935 | CEAT100M50 |
| | C3905, C3906, C3933, C3940, C3942 | CEAT470M16 |
| | C3911, C3912 | CEJQNP101M16 |
| | C3913, C3914 | CKSRYB102K50 |
| | C3931 | CKSRYB103K50 |
| | C3936, C3939 | CKSRYB104K16 |
| | C3915, C3916 | CKSRYB223K25 |

### RESISTORS

| | | |
|---|---|---|
| | R3915-R3932 | RS1/10S101J |
| | Other Resistors | RS1/16S###J |

### OTHERS

| | | |
|---|---|---|
| | CN3901 13P FFC CONNECTOR | 52044-1345 |
| | 3901 MINI JACK | AKN7026 |
| | KN3901 WRAPPING TERMINAL | VNF1084 |

## J LCDCONT ASSY

### SEMICONDUCTORS

| | | |
|---|---|---|
| | Q5001 | 2SC4081 |
| | D5004-D5006 | 1SS355 |
| | D5007, D5011-D5013 | UDZS6.2B |

### CAPACITORS

| | | |
|---|---|---|
| | C5012-C5014 | CCSRCH220J50 |
| | C5002, C5051 | CEAL470M16 |
| | C5052 | CFTLA104J50 |
| | C5018 | CKSRYB103K50 |
| | C5001, C5004 | CKSRYB104K16 |

### RESISTORS

| | | |
|---|---|---|
| | Other Resistors | RS1/16S###J |

### OTHERS

| | | |
|---|---|---|
| | CN5001 9P SOCKET | AKP7068 |
| | 5051 REMOTE RECEIVER UNIT | GP1UM27XK |

## K CONNECT ASSY

### SEMICONDUCTORS

| | | |
|---|---|---|
| | D5103 | 1SS355 |
| | D5101, D5102 | HZU2.0B |
| | D5104, D5105, D5107-D5109 | UDZS8.2B |

| Mark No. | Description | Part No. |
|---|---|---|

### RESISTORS

| | | |
|---|---|---|
| | Other Resistors | RS1/16S###J |

### OTHERS

| | | |
|---|---|---|
| | CN5102 9P PLUG | AKP7057 |
| | CN5101 10P CONNECTOR | AKP7134 |

## L KEY R TOP ASSY

### SWITCHES AND RELAYS

| | | |
|---|---|---|
| | S1902, S1903 | ASG7013 |

### RESISTORS

| | | |
|---|---|---|
| | Other Resistors | RS1/16S###J |

### OTHERS

| | | |
|---|---|---|
| | 1903 7P CABLE HOLDER | 51048-0700 |
| | CN1902 5P FFC CONNECTOR | 52044-0545 |
| | J1901 JUMPER WIRE | D20PYY0710E |

## M KEY R ASSY

### SWITCHES AND RELAYS

| | | |
|---|---|---|
| | S1901 | ASG7013 |

### RESISTORS

| | | |
|---|---|---|
| | Other Resistors | RS1/16S###J |

### OTHERS

| | | |
|---|---|---|
| | 1905 6P CABLE HOLDER | 51048-0600 |
| | 1904 7P CABLE HOLDER | 51048-0700 |
| | J1902 PARALELL WIRE | D20PYY0625E |

## N KEY L ASSY

### SEMICONDUCTORS

| | | |
|---|---|---|
| | Q1904 | 2SC4081 |
| | D1901 | SLR-343PC(LM) |

### SWITCHES AND RELAYS

| | | |
|---|---|---|
| | S1904 | ASG7013 |

### RESISTORS

| | | |
|---|---|---|
| | Other Resistors | RS1/16S###J |

### OTHERS

| | | |
|---|---|---|
| | 1907 3P CABLE HOLDER | 51048-0300 |
| | 1906 6P CABLE HOLDER | 51048-0600 |
| | J1903 JUMPER WIRE | D20PYY0310E |

## O KEY L TOP ASSY

### SWITCHES AND RELAYS

| | | |
|---|---|---|
| | S1905, S1906 | ASG7013 |

### RESISTORS

| | | |
|---|---|---|
| | Other Resistors | RS1/16S###J |

### OTHERS

| | | |
|---|---|---|
| | 1908 3P CABLE HOLDER | 51048-0300 |

| Mark | No. | Description | Part No. |
|---|---|---|---|

## P COMPONENT ASSY

**OTHERS**

| | | |
|---|---|---|
| CN8951 | 15P FFC CONNECTOR | 52045-0545 |
| JA8951 | 3P PIN JACK | VKB1182 |

# 6. ADJUSTMENT

## 6.1 TUNER SECTION

### ■ AM Tuner Section

• There is no adjustment in the AM tuner.

### ■ FM Tuner Section

• Set the mode selector to FM BAND.
• Connect the wiring as shown in Fig. 1.

**[ANT. INPUT SIGNAL]**

• Frequency : 98 MHz
• Modulation : OFF
• Input Level : 80 dBμV

| Step No. | Adjustment Title | Adjustment point | Measurement point | Adjustment value | Adjustment State |
|---|---|---|---|---|---|
| 1 | T-METER Adjustment | L201 | IC201 Pin 21/Pin23 | 0 ± 50mV | Adjust L201 so that the DC voltage between Pin 21 and Pin 23 of IC201 (Test point "Vtm") gets within 0 ± 50mV. |

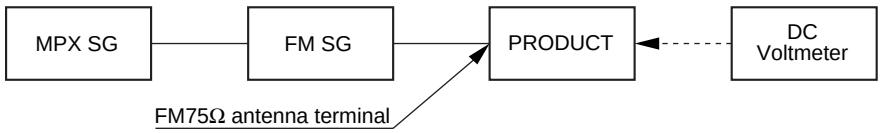



Fig.1 Adjustment Wiring Diagram

F FM/AM TUNER MODULE

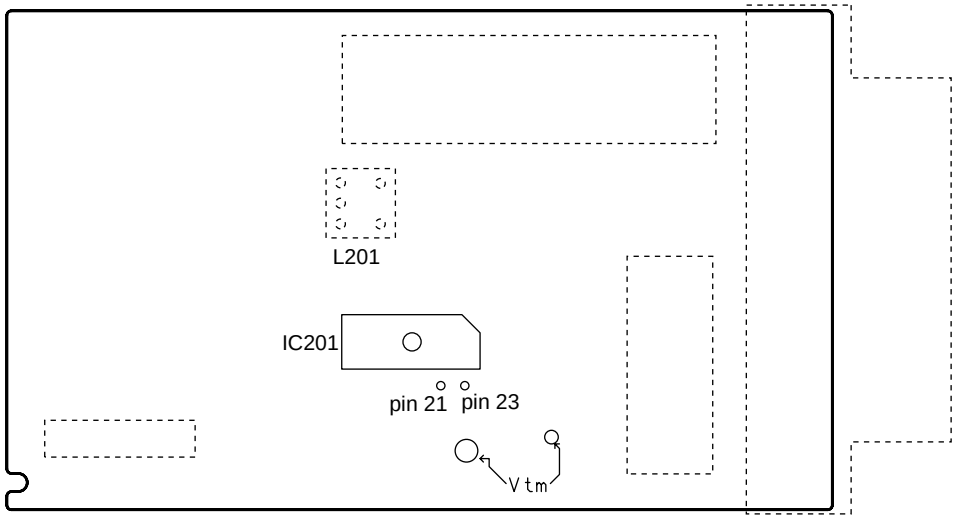



Fig.2 Adjustment Point

## 6.2 ADJUSTMENT ITEMS AND LOCATION

### ■ Adjustment Items

[Mechanism Part]

❶ Tangential and Radial Height Coarse Adjustment

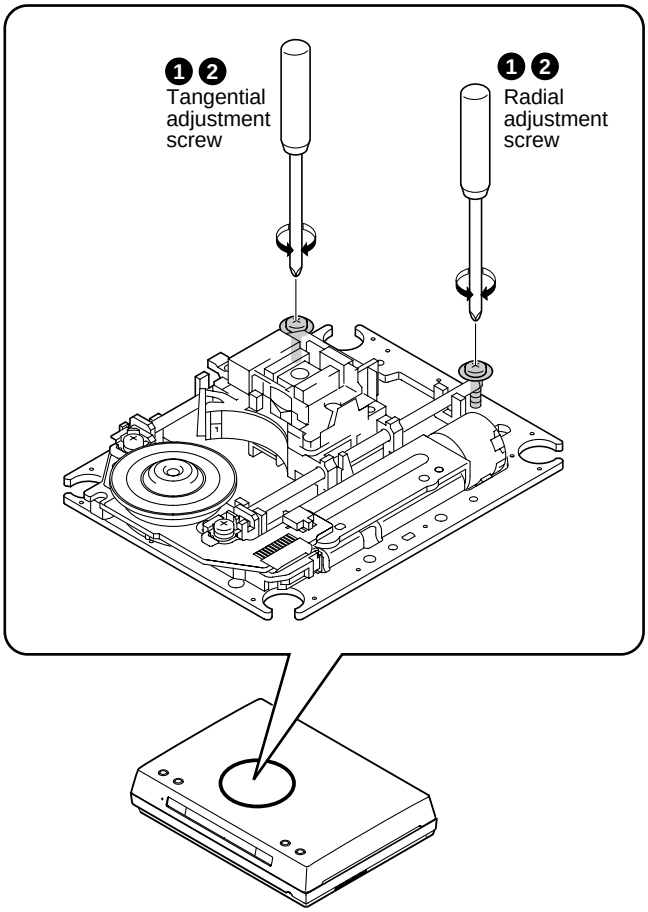
❷ DVD Jitter Adjustment

[Electrical Part]

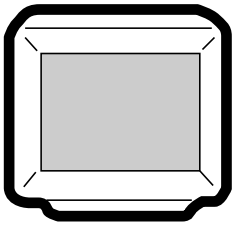
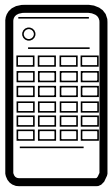
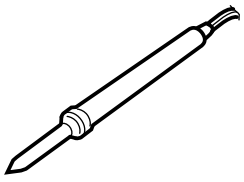
Electrical adjustments are not required.

### ■ Adjustment Points (Mechanism Part)

**Cautions:** After adjustment, adjustment screw locks with the Screw tight.




## 6.3 JIGS AND MEASURING INSTRUMENTS

| | | | |
|---|---|---|---|
| ⊕ Screwdriver (large) | ⊕ Screwdriver (medium) |  TV monitor |  Test mode remote control unit (GGF1381) |
| ⊕ Precise screwdriver | DVD test disc (GGV1025) |  Soldering iron | Screw tight (GYL1001) |

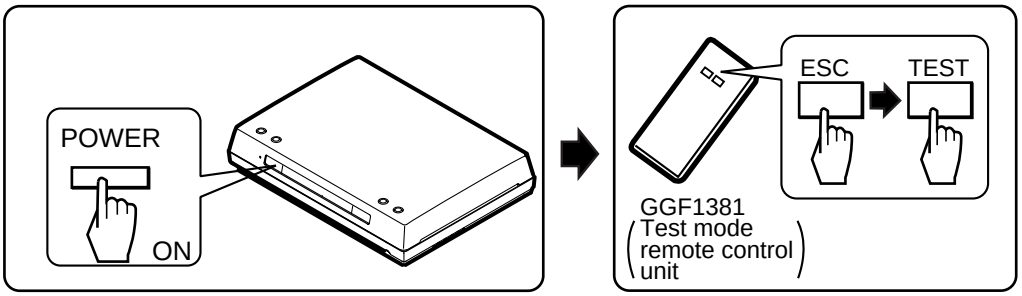
# 6.4 NECESSARY ADJUSTMENT POINTS

| When | Adjustment Points | |
|---|---|---|
| **■ Exchange Parts of Mechanism Assy** | | |
| Exchange the Pickup | Mechanical point | ❶, ❷ ＊ After adjustment, screw locks with the Screw tight. |
| | Electric point | ——— |
| Exchange the Traverse Mechanism | Mechanical point | ——— |
| | Electric point | ——— |
| Exchange the Spindle Motor | Mechanical point | ❷ ＊ After adjustment, screw locks with the Screw tight. |
| | Electric point | ——— |
| **■ Exchange PCB Assy** | | |
| Exchange PC Board<br>LOAB and DVDM ASSY | Mechanical point | ——— |
| | Electric point | ——— |

# 6.5 TEST MODE

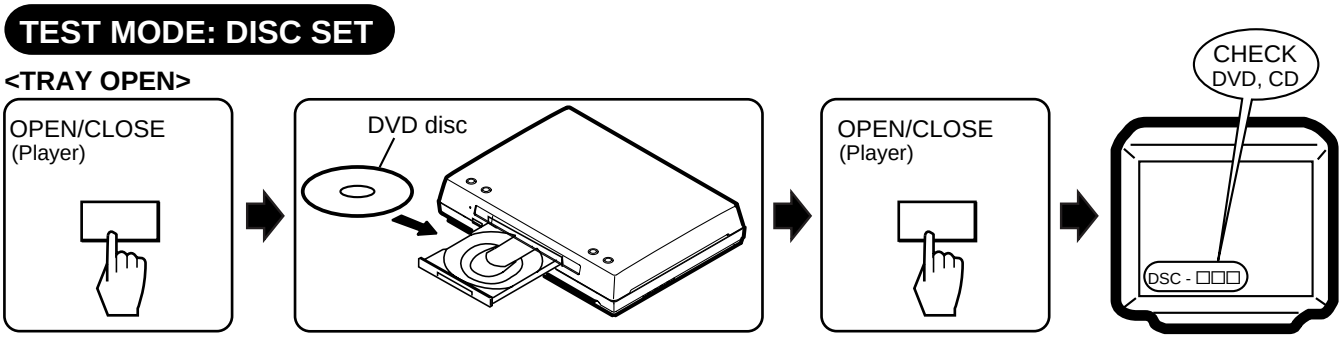
• The TEST MODE functions that are used only during adjustment are described here. For details, see "7.1.1 TEST MODE".

## TEST MODE: ON



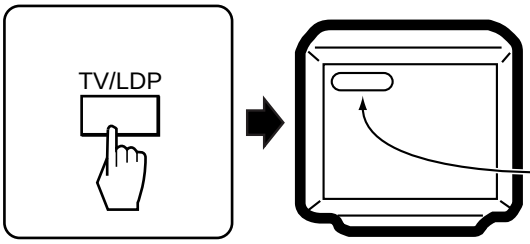

## TEST MODE: DISC SET

**<TRAY OPEN>**




## TEST MODE: PLAY

**<PLAY>**

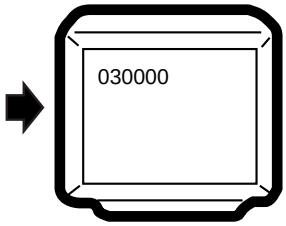



CAUTION:
Perform only trace, video and audio outputs are nothing.

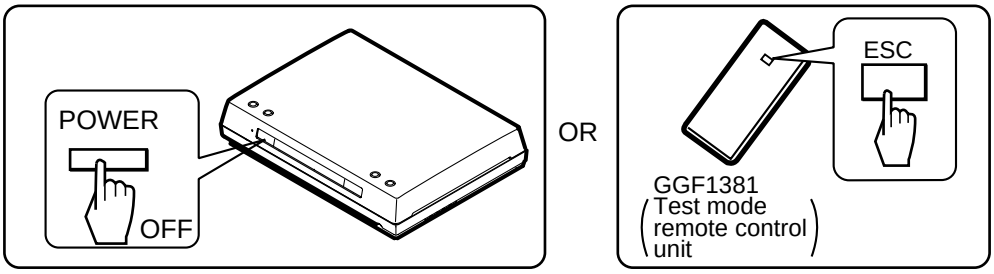
**< When playback with the target address of disc (DVD)>**

For example, when playback with # 30000

During PLAY [+10] ➡ [3] ➡ [0] ➡ [0] ➡ [0] ➡ [0] ➡ [CHP/TIM] Press keys in order




## TEST MODE: OFF

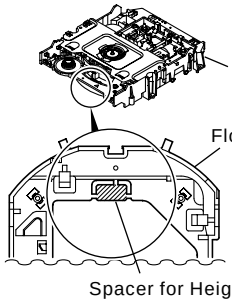


# 6.6 MECHANISM ADJUSTMENT

## 1 Tangential and Radial Height Coarse Adjustment

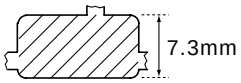
**START**

- Remove the Loading Mecha. Assy.
- Remove a Spacer for height adjustment attached to the back side (shaded area) of the Loading Mecha. Assy (Float Base) with nippers.

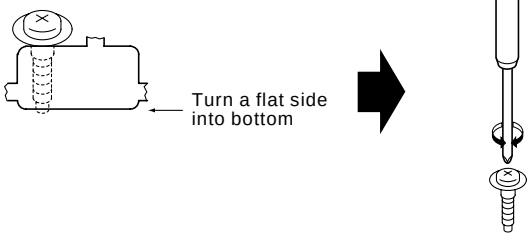



**Note:**
Before removing the flexible cable for the pickup, soldering of the pickup circuit is necessary.
For details, see "7.1.9 DISASSEMBLY".

**Cautions:**
Because there is not a Spacer for height adjustment in adjustment after the second time, will keep it at need.
(This parts is Traverse mechanism exclusive use of a model for 2003 years)



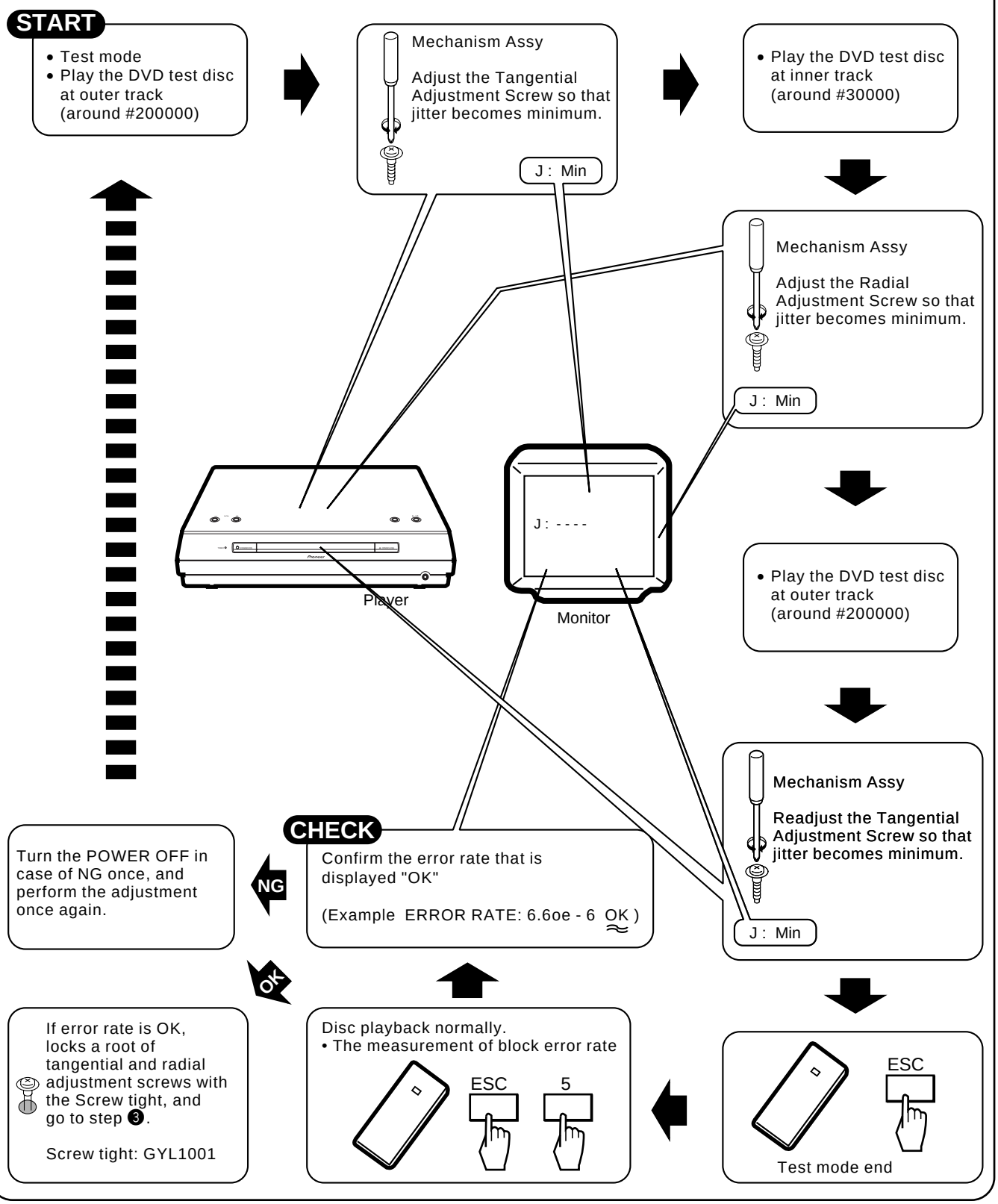

Put a spacer between a Tangential (or Radial) adjustment screw and Mechanism Base and turn each screw to adjust the height. (Refer to "6.1 ADJUSTMENT ITEMS AND LOCATION".)



## 2 DVD Jitter Adjustment

- Playback method of inner and outer address for the purpose is refererd to "6.5 TEST MODE".
- Jitter indication of the monitor is refererd to "7.1.2 DISPLAY SPECIFICATION OF THE TEST MODE".

Use disc: GGV1025


START
• Test mode
• Play the DVD test disc at outer track (around #200000)
Mechanism Assy
Adjust the Tangential Adjustment Screw so that jitter becomes minimum.
J : Min
• Play the DVD test disc at inner track (around #30000)
Mechanism Assy
Adjust the Radial Adjustment Screw so that jitter becomes minimum.
J : Min
J : - - - -
Player
Monitor
• Play the DVD test disc at outer track (around #200000)
Mechanism Assy
Readjust the Tangential Adjustment Screw so that jitter becomes minimum.
J : Min
CHECK
Confirm the error rate that is displayed "OK"
(Example ERROR RATE: 6.6oe - 6 OK )
NG
Turn the POWER OFF in case of NG once, and perform the adjustment once again.
OK
If error rate is OK, locks a root of tangential and radial adjustment screws with the Screw tight, and go to step ❸.
Screw tight: GYL1001
Disc playback normally.
• The measurement of block error rate
ESC
5
ESC
Test mode end

# 7. GENERAL INFORMATION

## 7.1 DIAGNOSIS

### 7.1.1 TEST MODE

#### Test Mode Functional Specification

**① Test mode entry**

In the power ON state, press the [ESC] (A8-5F) key and [TEST / RANDOM] (A8-5E) key in order of the Test mode remote control unit.

• OSD displays test mode. Refer to the "7.1.2 DISPLAY SPECIFICATION OF THE TEST MODE".

**② Release the Test mode**

• Turn off the power.
• Press the [ESC] (A8-5F) key of the remote control unit and reset it.

**③ Tray open / close**

• Press the [REPEAT A-B] (A8 - 48) key of the remote control unit.
• Press the [OPEN / CLOSE] key of the main unit from the stop state.

**④ Playback stop**

1. Press the [REPEAT] (A8 - 44) key of the remote control unit from the playback state.
2. Press the [STOP] key of the remote control unit or main unit from the playback state.
   (Playback stops, but the loaded disc keeps rotating.)

**⑤ LD ON**

DVD : Press the [TEST] (A8-5E) and [1] (A8-01) keys in order, and turn on the laser diode (650n).
CD : Press the [TEST] (A8-5E) and [4] (A8-04) keys in order, and turn on the laser diode (780n).

**⑥ Focus on / sweep**

1. Lock the focus by pressing the [TEST] (A8-5E) and [2] (A8-02) keys in order.
2. Repeat focus sweep by pressing the [TEST] (A8-5E) and [3] (A8-03) keys in order.

**⑦ Spindle FG servo**

CAV : Press the [TEST] (A8-5E) and [5] (A8-05) keys in order,then rise up the spindle and FG servo becomes on.
CLV : Press the [TEST] (A8-5E) and [9] (A8-09) keys in order,then rise up the spindle and FG servo becomes on.

**⑧ Tracking open / close**

1. Open tracking by pressing the [STEP FWD] (A8-54) key of the remote control unit in the play state.
2. Close tracking by pressing the [STEP REV] (A8-50) key of the remote control unit in the play state.

**⑨ Slider servo on/off**

1. Turn on the slider servo by pressing the [TEST] (A8-5E) and [CX] (A8-0E) keys in order.
2. Turn off the slider servo by pressing the [TEST] (A8-5E) and [TV/LDP] (A8-0F) keys in order.

**⑩ Slider in / out**

Slider in : In the tracking off state, press the [SCAN REV] (A8-11) key of the remote control unit.
Slider out : In the tracking off state, press the [SCAN FWD] (A8-10) key of the remote control unit.

**⑪ Play (perform only the ID search and trace to the specified location)**

Press the [TV/LDP] (A8-0F) key of the remote control unit from the stop state.
Perform only trace, video and audio outputs are nothing.

**⑫ Screen display ON/OFF**

1. Turn off the display by pressing the [AUDIO] (A8-1E) key of the remote control unit.
2. Turn on the display by pressing the [DISPLAY] (A8-43) key of the remote control unit.

## ⑬ Search

### 1. Search address input entry

- It becomes the address input mode when pressing the [+10] (A8-1F) key. (Most significant digit of an address displays "<".)
- In this time, display the last address as the initial state.

### 2. Search address input

- Press the [0] to [9] (A8-00 to 09) keys of the remote control unit. In the DVD, set an address with hexadecimal.
- In the address input mode, turn to the hexadecimal input by pressing the [PROGRAM] (A8-4C) key (display a "∗" mark), and [1] to [6] keys are each input as A to F.
- Hexadecimal input and decimal input can switch with toggle.
- In case of CD, perform only the absolute time search.

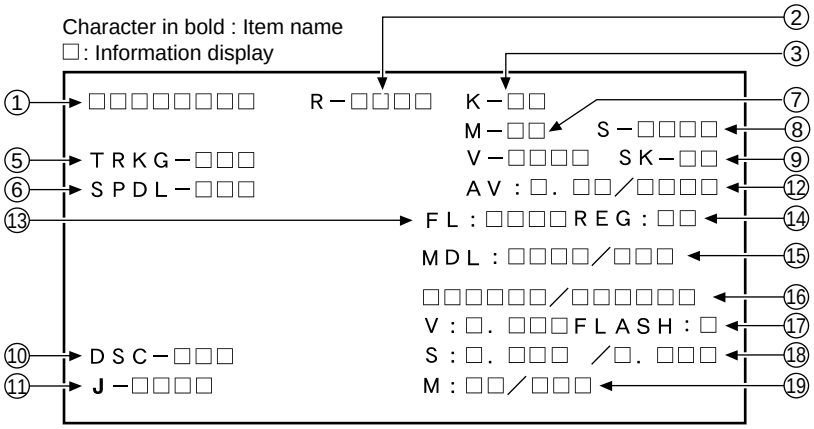
### 3. Search execution

- Press the [CHP/TM] (A8-13) key of the remote control unit.
- After the search, perform only trace and video and audio outputs are nothing.

### 4. Release the Search address input

- Clear the address by pressing the [CLEAR] (A8-45) key. Release the address input mode when pressing the [CLEAR] key once again.

## 7.1.2 DISPLAY SPECIFICATIONS OF THE TEST MODE




① **Address indication**
The address being traced is displayed in number.
(as for the DVD, indication of decimal number is possible.)
DVD : ID indication (hexadecimal number, 8 digits)
[＊＊＊＊＊＊＊＊]
CD : A-TIME (min. sec.) [0 0 0 0 ＊＊＊＊]

② **Code indication of remote control unit [R – ＊＊＊＊]**
In case of double code, display a 2nd code.

③ **Main unit keycode indication [K – ＊＊]**

⑤ **Tracking status [TRKG – ＊＊＊]**
Tracking on : [ON]
Tracking off : [OFF]

⑥ **Spindle status [SPDL – ＊＊＊]**
[OFF], [ACC/BRK], [CAV], [CLV]

⑦ **Mechanism (loading) position value [M – ＊＊]**
Unknown : [01] or [41]
Open state : [04]
Close state : [08]
During opening : [12]
During closing : [22]

⑧ **Slider position [S – ＊＊＊＊]**
In Side Switch ON : [01]
In Side Switch OFF : [00]

⑨ **Output video system [V – ＊＊＊＊]**
NTSC system : [NTSC]
PAL system : [PAL]
Automatic setting : [AUTO]

**Scart terminal output [SK – ＊＊]**
(Display only the WY model which can do the output setting of scart terminal.)
VIDEO : [00]
S-VIDEO : [01]
RGB : [02]

⑩ **Disc sensing [DSC – ＊＊＊]**
The type of discs loaded is displayed.
[DVD], [CD ], [ ]

⑪ **Jitter value [J – ＊＊＊＊]**

⑫ **Version of the AV-1 chip / version of firmware [AV: ＊＊ / ＊＊＊＊＊＊＊＊]**

⑬ **Version of the FL controller [FL: ＊＊＊＊]**

⑭ **Region setting of the player [REG: ＊]**
Setting value : [1] to [6]

⑮ **Destination setting of the System Control Microcomputer [MDL: ＊＊＊＊ / ＊＊＊]**
Four characters in the front represent the type of model.
Three characters in the back represent the destination code.
J: /J, K: /KU, /KC, /KU/KC, R: /RL/RD, RAM : /RAM,
LB: /LB, WY: /WY

⑯ **Part number of the flash ROM and DVD Control Microcomputer [＊＊＊＊＊＊ / ＊＊＊＊＊＊]**

⑰ **Version of the flash ROM [V: ＊. ＊＊＊]**
**Flash ROM size [FLASH = ＊＊]**

⑱ **Revision of the DVD Control Microcomputer [S: ＊. ＊＊＊ / ＊. ＊＊＊]**
version . revision / build number of the ST core

⑲ **Revision of the DVD mechanism controller [M: ＊＊ / ＊＊＊]**
Kinds of version / firmware of the FE.
RAM or ROM

## 7.1.3 FUNCTIONAL SPECIFICATION OF THE SHORTCUT KEY

Only during normal playback, the following shortcut keys can be assigned by pressing a required key after pressing the ESC key of the remote control unit. To quit, press the ESC key

| Command Contents | Conditions | Remote Control Key Name | Remote Control Code |
|---|---|---|---|
| Memory clear and resion / revision indication | | CLEAR (∗1) | A8-45 |
| Average value measurement of DVD error rate | | 5 (∗1) | A8-05 |
| CD error rate measurement | | 5 (∗1) | A8-05 |
| Aspect : Pan scan | | 2 | A6-01 |
| Aspect : Letter box | | 3 | A6-02 |
| Aspect : Wide | | 4 | A6-03 |
| Digital : AC3 | | 5 | A6-04 |
| Digital : AC-3 > PCM | | 6 | A6-05 |
| Virtual surround : OFF | Only for models having the corresponding functions | 7 | A6-06 |
| Virtual surround : TruSurround | | 8 | A6-07 |
| Digital output ON | | REPEAT A | A6-A1 AF-E8 |
| Digital output OFF | | REPEAT B | A6-A1 AF-E4 |
| DTS Digital output ON | | STEP FWD | A6-A1 AF-B7 |
| DTS Digtal output OFF | | STEP REV | A6-A1 AF-B8 |
| Scart terminal output : VIDEO | WY, models equipped with Scart terminal | AUDIO | A6-A1 AF-BE |
| Scart terminal output : S-VIDEO | | SUBTITLE | A6-A1 AF-36 |
| Scart terminal output : RGB | | ANGLE | A6-A1 AF-B5 |
| Progressive OFF | Only for progressive models | R_SKIP | A6-92 |
| Progressive ON | | F_SKIP | A6-91 |
| Audio 5.1 CH ON | Only for models having the corresponding functions | KD_ENTER | A6-74 |
| FL indication of EDC / ID error | | CX (∗1) | A8-0E |
| FL indication of ID number | | STEREO (∗1) | A8-4A |
| ZOOM ON (X4) | | ZOOM | A6-A1 AF-37 |
| ZOOM OFF | | < X3 (∗1) | A8-59 |
| Service mode indication (error rate indication, etc.) | | CHP/TIM (∗1) | A8-13 |
| Model information indication | | CHAP (∗1) | A8-40 |
| Background color change | | +10 (∗1) | A8-1F |
| Audio last stage mute ON | | 9 | A6-08 |
| Audio last stage mute OFF | | 0 | A6-09 |
| Title search Input mode IN<br>Title No. input<br>Search execution | | SIDE A (∗1)<br>Numbers (∗1)<br>PLAY (∗1) | A8-4D<br>A8-00 to A8-09<br>A8-17 |
| Region confimation mode | | AUDIO (∗1)<br>Numbers (∗1) | A8-1E<br>A8-01 to A8-08 |

∗1 : Test mode remote control unit

**• Service mode indication (ESC + CHP/TIM keys)**
ID Address
The error rate is always displayed in exponential notation, e.g., ∗.∗ ∗ e - ∗, for both DVDs and CDs.
EDC/ID/AV 1 error history (ID Address, EDC/ID/AV 1 Error, last eight errors)
Self-diagnosis functions (If a mechanical error has occurred, the mechanical-error history is also displayed.)

**• Calculation of the average error rate (ESC + "5" [Test mode remote control unit] keys)**
The average of the last eight error rates is calculated and indicated in exponential notation. After the calculation is completed, "OK" or "NG" is displayed. If "NG" is displayed, the disc tray will open (for both DVDs and CDs)
For DVDs: OK with 5.0e-4 or less, for CDs: OK with 7.6e-3 or less

**• Indication of model information (ESC + CHAP keys)**
The items from 12 to 19 of the TEST MODE Indications are displayed. However, in the indications, S in the standard test mode is changed to B.E VERSION, and M is changed to F.E VERSION. For details, see 7.1.4.

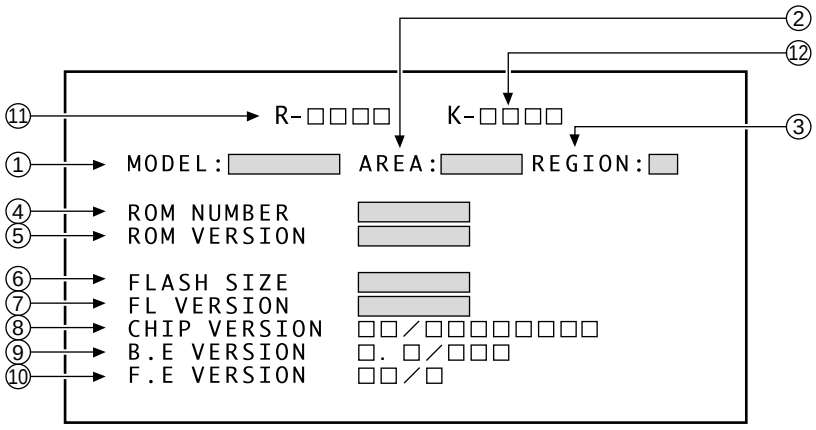
**• Change of the background colors (ESC + "+10" [Test mode remote control unit] keys)**
Every time the keys are pressed, the background color is changed between blue and green alternately.
(The green background is used in SETUP NAVIGATOR.)

**• Region confirmation mode (ESC + AUDIO [Test mode remote control unit] + "1"-"8" [Test mode remote control unit] keys)**
After you press the AUDIO key while holding the ESC key pressed and then input the region number, if the number is different from that set in the unit, an error message is displayed, and the tray opens.

## 7.1.4 SPECIFICATION OF MODEL INFORMATION

To display model information : Press the ESC key then the CHAP key.
To close the model information display : Press the ESC key.

**• Display contents**




Character in bold : Item name
□: Information display

① **Model name**
Display it according to model information set from the System Control Microcomputer.
② **Destination indication**
Display it according to model information set from the System Control Microcomputer.
③ **Region No.**
④ **Part number**
⑤ **ROM version**
⑥ **Flash size**
⑦ **FL controller version**

⑧ **CHIP VERSION**
Version of ST CHIP
CUT ID / JTAG ID
(two columns) (eight columns)

⑨ **B.E VERSION**
Version of BACK END (version of ST core software)
□.□ /□□□
softwareVersion . softwareRevision / buildNumber

⑩ **F.E VERSION**
Version of FRONT END (version of mechanism controller CHIP software)
□□/ □
MainVersion / Kinds of firmware RAM or ROM

⑪ **Remote control code**
⑫ **Key code of Main unit**

## 7.1.5 FUNCTIONAL SPECIFICATION OF THE SERVICE MODE

**• EDC / ID error LCD display (shortcut function)**

EDC/ID error is displayed on the LCD display if you press the CX key while holding the ESC key on the TEST MODE remote control unit pressed. To quit while an EDC/ID error is displayed, press the ESC key.

LCD display

0 0 / 0 0 / 0 1 ∗

∗: Lights when an AV1 error was generated at least once.

Number of sites where an EDC or ID error was generated

Number of retrials while an ID error is being generated
(only displayed at the moment when an error is being generated),
and for the ST models, the number of retrials made for the latest ID error

Number of retrials while an EDC error is being generated
(only displayed at the moment when an error is being generated),
and the number of retrials made for the latest EDC error

**• Display during Service Mode**

To enter Service Mode, press the CHP/TIM key while holding the ESC key pressed.
To quit, press the ESC key.

**Service mode display**

① ID Address

② Error rate (always displayed), in exponential notation

∗∗ (∗∗∗∗)

Number of error rates

02: Indicates use of the same method as for the 02 models,
No indication: Indicates use of the method used for models before the 02 model

③ EDC/ID/AV1 error history (ID Address, EDC/ID/AV1 errors, last eight errors)

Description of AV1 errors
BIT0: In BE code, an EDC error, FEC I/F buffer overflow, or "not valid" is generated (B.E error)
BIT1: In BE code, the ID is different from that of the target (B.E error)
BIT2: An error was generated in FE-added 2-byte EDC data. (F.E error)

④ Self-diagnosis functions

Whether F.E is normal or not is checked.

FE OK: No abnormality in F.E

FE Error: Abnormality is recognized in F.E.
Pressing the CHP/TIM key again displays the mechanical error history. Each press of the CHP/TIM key changes the displays between the mechanical error history and the Service Mode display.
For details on the mechanical error history, refer to the addendum.

Indication plan contents

| AV1 ERR | BIT 2 | 1 | 0 |
|---|---|---|---|
| 00 | 0 | 0 | 0 |
| 01 | 0 | 0 | 1 |
| 02 | 0 | 1 | 0 |
| 03 | 0 | 1 | 1 |
| 04 | 1 | 0 | 0 |
| 05 | 1 | 0 | 1 |
| 06 | 1 | 1 | 0 |
| 07 | 1 | 1 | 1 |

Character in bold : Item name
□: Information display

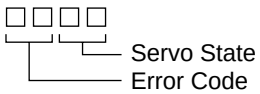
## 7.1.6 MECHANICAL ERROR HISTORY

## ■ Mechanical Error History

Only if a mechanical error (FE error) has been generated, a mechanical error history containing up to the last eight errors is displayed if you press the "ESC" + "CHP/TIM" key in Normal Mode.
Errors are displayed in descending order, with the latest one at the top.

**Description of the mechanical error history**

① Error number
The first two digits are for the error code, and the second two digits are for the servo state.

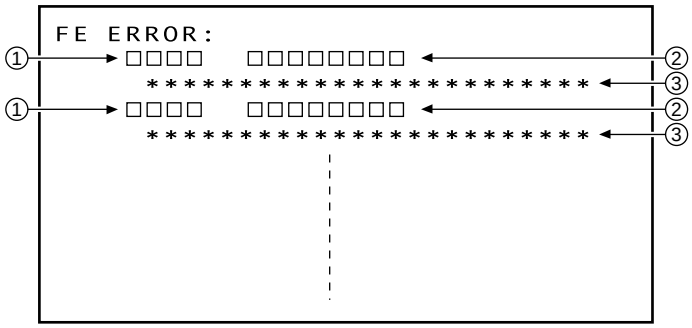



② Error number
The elapsed time from the time when the system was turned on until an error was generated is displayed.
Note: If a later error time is shorter than the previous error time, it means that the unit was turned off then on again.

③ Description of errors
Error messages are displayed.
Example: If the error code is 0x13 (Focus lost timeout) and the servo state is 0x05 (Disc judge), the message becomes "Focus lost timeout in Disc judge."

Note: When an error has been generated, if the servo state is "Disc judge," the disc tray opens, and if the servo state is other than "Disc judge," the unit stops (excluding a case of a device error with the error code 0xd∗).

Indication contents




**• List of the error codes**

| | | | |
|---|---|---|---|
| **FOCUS ERROR** | 0x0∗ | **FOCUS TIMEOUT** | 0x1∗ |
| Focus on error | 0x01 | Focus on timeout | 0x11 |
| Focus off error | 0x02 | Focus off timeout | 0x12 |
| Focus lost error | 0x03 | Focus lost timeout | 0x13 |
| Focus balance adjust error | 0x04 | Focus balance adjust timeout | 0x14 |
| Focus gain adjust error | 0x05 | Focus gain adjust timeout | 0x15 |
| Focus sweep error | 0x06 | Focus sweep timeout | 0x16 |
| Focus reflection error | 0x07 | Focus reflection timeout | 0x17 |
| **TRACKING ERROR** | 0x2∗ | **TRACKING TIMEOUT** | 0x3∗ |
| Tracking on error | 0x21 | Tracking on timeout | 0x31 |
| Tracking off error | 0x22 | Tracking off timeout | 0x32 |
| Tracking lost error | 0x23 | Tracking lost timeout | 0x33 |
| Tracking balance adjust error | 0x24 | Tracking balance adjust timeout | 0x34 |
| Tracking gain adjust error | 0x25 | Tracking gain adjust timeout | 0x35 |
| **STEPPING ERROR** | 0x4∗ | **STEPPING TIMEOUT** | 0x5∗ |
| Stepping on error | 0x41 | Stepping on timeout | 0x51 |
| Stepping off error | 0x42 | Stepping off timeout | 0x52 |
| Stepping lost error | 0x43 | Stepping lost timeout | 0x53 |
| Stepping move error | 0x44 | Stepping move timeout | 0x54 |
| **SPINDLE ERROR** | 0x6∗ | **SPINDLE TIMEOUT** | 0x7∗ |
| Spindle on error | 0x61 | Spindle on timeout | 0x71 |
| Spindle off error | 0x62 | Spindle off timeout | 0x72 |
| Spindle lost error | 0x63 | Spindle lost timeout | 0x73 |
| Spindle CAV error | 0x64 | Spindle CAV timeout | 0x74 |
| Spindle CLV error | 0x65 | Spindle CLV timeout | 0x75 |
| **ACQUISITION ERROR** | 0x8∗ | **ACQUISITION TIMEOUT** | 0x9∗ |
| PLL lost error | 0x83 | PLL lost timeout | 0x93 |
| **DECODER ERROR** | 0xa∗ | **DECODER TIMEOUT** | 0xb∗ |
| ID lost error | 0xa3 | ID lost timeout | 0xb3 |
| **DEVICE ERROR** | 0xd∗ | | |
| SRAM error | 0xd1 | | |

**• List of the servo states**

| | |
|---|---|
| 0x00 | Reset |
| 0x01 | Stop (inside position) |
| 0x02 | Stop (any position) |
| 0x03 | Braking for stop |
| 0x04 | New disc |
| 0x05 | Disc judge |
| 0x06 | Reserved 1 |
| 0x07 | Playing |
| 0x08 | Start up |
| 0x09 | Seeking |
| 0x0A | Pausing |
| 0x0B | Reading BCA |
| 0x0C | Reserved 2 |
| 0x0D | |
| 0x0E | Tray open |
| 0x0F | Tray moving |

Note : 0 x □ □
code
(Only this part is displayed to a display)

## ERROR CODE TABLE

| Error Name | No. | Causes | Check Item | Possibility of Trouble | Remarks |
|---|---|---|---|---|---|
| FOCUS ERROR (0 x 0*) | | | | | |
| Focus on error | 0 x 01 | Focus on could not be completed | Are not there a dirt or a scratch in the Disc? Does LD become weak? Does the lens move up and down? | 1. Pickup<br>2. Driver<br>3. Front End IC | |
| Focus off error | 0 x 02 | Focus off could not be completed | Unknown | | |
| Focus lost error | 0 x 03 | Focus servo is lost | Are not there a dirt or a scratch in the Disc? Does LD become weak? | 1. Pickup | |
| Focus balance adjust error | 0 x 04 | AFB on could not be completed | | | |
| Focus gain adjust error | 0 x 05 | Focus AGC could not be completed | | | |
| Focus sweep error | 0 x 06 | | | | |
| Focus reflection error | 0 x 07 | Dimensions of S curve did not reach to the aim value | Does LD become weak? | 1. Pickup | |
| FOCUS TIMEOUT (0 x 1*) | | | | | |
| Focus on timeout | 0 x 11 | Did timeout at focus on | Are not there a dirt or a scratch in the Disc? Does LD become weak? Does the lens move up and down? | 1. Pickup<br>2. Driver<br>3. Front End IC | |
| Focus off timeout | 0 x 12 | Did timeout at focus off | | | |
| Focus lost timeout | 0 x 13 | Did timeout at focus backup | | | |
| Focus balance adjust timeout | 0 x 14 | Did timeout at AFB | | | |
| Focus gain adjust timeout | 0 x 15 | Did timeout at AGC | | | |
| Focus sweep timeout | 0 x 16 | | | | |
| TRACKING ERROR (0 x 2*) | | | | | |
| Tracking on error | 0 x 21 | Tracking on could not be completed | | 1. Pickup<br>2. Driver<br>3. Front End IC | |
| Tracking off error | 0 x 22 | Tracking off could not be completed | | | |
| Tracking lost error | 0 x 23 | Tracking servo is lost | | 1. Pickup | |
| Tracking balance adjust error | 0 x 24 | ATB could not be completed | | 1. Pickup | |
| Tracking gain adjust error | 0 x 25 | AGC could not be completed | | 1. Pickup | |
| Tracking jump error | 0 x 26 | Tracking jump could not be completed | | | |
| TRACKING TIMEOUT (0 x 3*) | | | | | |
| Tracking on timeout | 0 x 31 | Did timeout at tracking on | Are not there a dirt or a scratch in the Disc? | 1. Pickup<br>2. Driver<br>3. Front End IC | |
| Tracking off timeout | 0 x 32 | Did timeout at tracking off | | | |
| Tracking lost timeout | 0 x 33 | Did timeout at tracking backup | Are not there a dirt or a scratch in the Disc? | 1. Pickup | |
| Tracking balance adjust timeout | 0 x 34 | Did timeout at ATB | | 1. Pickup | |
| Tracking gain adjust timeout | 0 x 35 | Did timeout at AGC | | 1. Pickup | |
| Tracking jump timeout | 0 x 36 | Did timeout at tracking jump | | | |
| STEPPING ERROR (0 x 4*) | | | | | |
| Stepping on error | 0 x 41 | Stepping on could not be completed | | 1. Pickup<br>2. Driver<br>3. Front End IC | |
| Stepping off error | 0 x 42 | Stepping off could not be completed | | | |
| Stepping lost error | 0 x 43 | Stepping servo is lost | | | |
| Stepping move error | 0 x 44 | Stepping could not move | Do move to inner and outer periphery of the stepping in the test mode? Do indicate "S-04" at the most inner periphery of the stepping? | 1. Stepping motor<br>2. Inside switch<br>3. Driver | |
| STEPPING TIMEOUT (0 x 5*) | | | | | |
| Stepping on timeout | 0 x 51 | Did timeout at stepping on | | 1. Pickup<br>2. Driver<br>3. Front End IC | |
| Stepping off timeout | 0 x 52 | Did timeout at stepping off | | | |
| Stepping lost timeout | 0 x 53 | Did timeout at stepping backup | | | |
| Stepping move timeout | 0 x 54 | Did timeout at stepping movement | Do move to inner and outer periphery of the stepping in the test mode? Do indicate "S-04" at the most inner periphery of the stepping? | 1. Stepping motor<br>2. Inside switch<br>3. Driver | |

| Error Name | No. | Causes | Check Item | Possibility of Trouble | Remarks |
|---|---|---|---|---|---|
| SPINDLE ERROR (0 x 6∗) | | | | | |
| Spindle on error | 0 x 61 | Spindle on could not be completed | | | |
| Spindle off error | 0 x 62 | Spindle off could not be completed | | | |
| Spindle lost error | 0 x 63 | Spindle lost control | | | |
| Spindle CAV error | 0 x 64 | CAV on could not be completed | | | |
| Spindle CLV error | 0 x 65 | CLV on could not be completed | | | |
| SPINDLE TIMEOUT (0 x 7∗) | | | | | |
| Spindle on timeout | 0 x 71 | Did timeout at spindle on | | | |
| Spindle off timeout | 0 x 72 | Did timeout at spindle stop | | | |
| Spindle lost timeout | 0 x 73 | Did timeout at spindle backup | Are not there a dirt or a scratch in the Disc?<br>Is FG output from the driver? | 1. Spindle motor<br>2. Spindle driver | |
| Spindle CAV timeout | 0 x 74 | Did timeout at CAV on | Is spindle rotating?<br>Is FG output from the driver?<br>Is the PDM output from L6315? | 1. Spindle motor<br>2. Spindle driver<br>3. Front End IC | |
| Spindle CLV timeout | 0 x 75 | Did timeout at CLV on | | | |
| ACQUISITION ERROR (0 x 8∗) | | | | | |
| PLL lost error | 0 x 83 | PLL is lost | Are not there a dirt or a scratch in the Disc? | 1. Pickup<br>2. Front End IC | |
| ACQUISITION TIMEOUT (0 x 9∗) | | | | | |
| PLL lost timeout | 0 x 93 | Did timeout at PLL backup | Are not there a dirt or a scratch in the Disc? | 1. Pickup<br>2. Front End IC | |
| DECODER ERROR (0 x a∗) | | | | | |
| ID lost error | 0 x a3 | ID is not readable | Are not there a dirt or a scratch in the Disc? | 1. Pickup<br>2. Front End IC | |
| DECODER TIMEOUT (0 x b∗) | | | | | |
| ID lost timeout | 0xb3 | Did timeout at ID backup | Are not there a dirt or a scratch in the Disc? | 1. Pickup<br>2. Front End IC | |
| DEVICE ERROR (0 x d∗) | | | | | |
| SRAM error | 0 x d1 | Cannot access SRAM | Power supply of SRAM<br>Is not bus line short-circuiting? | 1. SRAM<br>2. Front End IC<br>3. Front End-SRAM bus line | |
| FAILSAFE (0 x e∗) | | | | | |
| Unexpected error | 0 x e1 | Unexpected error | | 1. software runaway<br>3. Software bug | |

# Protection Specifications and Service Mode

## • Protection Specifications

The system microcomputer (CONTRL Assy IC5501) for this unit always monitors if abnormality of the power is generated, and as soon as an abnormality is detected shuts off the power. The specifications of the microcomputer terminal for monitoring are as follows:

| Name of microcomputer terminal | | XPROTECT (Pin 22) | VDET (Pin 17) |
|---|---|---|---|
| Monitoring item | | Abnormality of AMP-system power Short-circuiting of the SP terminal, etc. | Abnormality of power inside the DVDM Assy |
| Voltage at terminal | In normal conditions | 0.71× Vdd* or more | 0.5 Vdd-0.85 Vdd* |
| | In abnormal conditions | 0.36×Vdd–0.71× Vdd* | |
| | In failure | 0.36×Vdd* or less | 0.85 Vdd* or more<br>0.5 Vdd* or less |
| Monitoring start time | | 1.5 sec after power is turned on | 1.5 sec after power is turned on |
| Time required for determining abnormality | | 0.5 sec after detection | 0.5 sec after detection |

*Vdd = Approx. 5 V (depending on the unit)

In abnormal conditions or in failure, the TIMER LED flashes after the power is shut off. If the power was shut off because of an abnormality, it can be turned on by pressing the STANDBY/ON key. However, if the power was shut off because of failure, **for one minute after a shutdown the STANDBY/ON key is disabled in order to protect against possible ignition of fumes.** If the AC power cord is pulled out during this one minute of standby, when the AC power cord is reconnected, the STANDBY/ON key will still be disabled until the remaining seconds have elapsed.

This unit has Service Test mode for analyzing the above power abnormality. Its specifications are as follows:

### 1. Specific conditions for Service Test mode

- VDET is neglected.
- XPROTECT is neglected.
- **Even if the unit is urgently shut down in failure in Normal mode, you can turn it on without waiting for one minute.**
- Able to operate without AC pulse.
- Only DVD-TUNER block can operate without AMP POWER block if supplying needed DC voltage.

### 2. How to enter Service Test mode

- While connecting STEST port (IC5501 Pin43) to "+5V", connect AC power cord. (See next page.)

### 3. How to quit Service Test mode, and the conditions for quitting

- To quit Service Test mode, turn the power off or disconnect the AC power cord.
- When quitting Service Test mode, only data on protection in RAM are cleared.

### 4. Indications when Service Test mode starts

- Indications on the LCD display when Service Test mode starts differ depending on whether the unit was turned off normally or if the unit

**[After the power is turned off normally]**

LCD display `Welcome!` ⇩
LCD display `Volume 0` ⇩
LCD display `DV SERVICE`

**[After the power is shut down because of an abnormality in the AMP system]**

LCD display `PRTCT WNG` ⇩
LCD display `Volume 0` ⇩
LCD display `DV SERVICE`

**[After the power is shut down because of a failure in the AMP system]**

LCD display `PRTCT ERR` ⇩
LCD display `Volume 0` ⇩
LCD display `DV SERVICE`

**[After the power is shut down because of a failure in the DVD system]**

LCD display `DVD PRTECT` ⇩
LCD display `Volume 0` ⇩
LCD display `DV SERVICE`

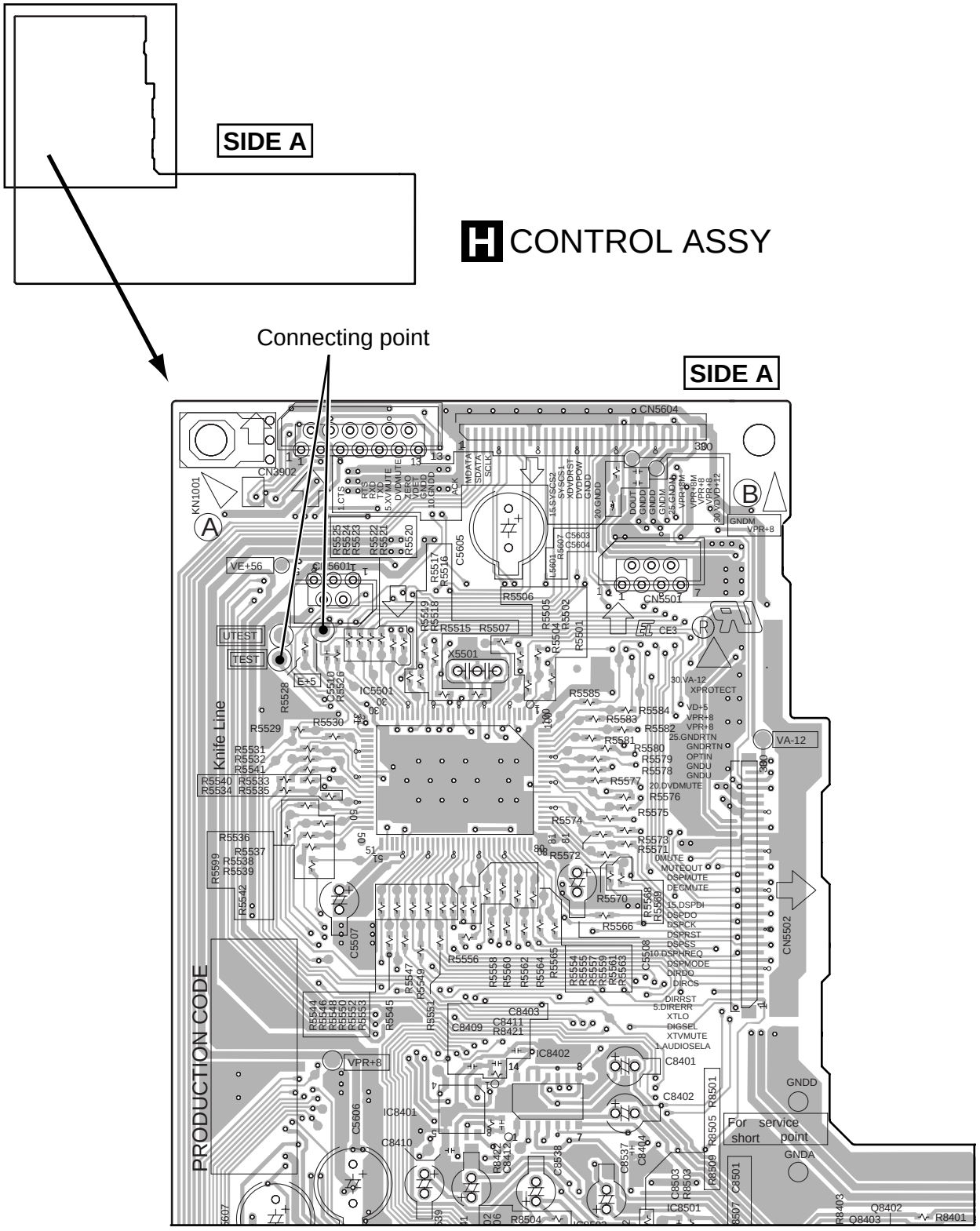
### 5. Operations during Service Test mode

- Basically, operations in Service Test mode are the same as in Normal mode. However, to clarify that it is in Service Test mode, during this mode, when functions are changed, the indications on the LCD display become as follows:

| [Functions] | [Indications on the LCD display] |
|---|---|
| DVD/CD | `DV SERVICE` |
| TUNER | `TX SERVICE` |
| LINE1 ANA | `L1a SERVICE` |
| LINE1 DIG | `L1d SERVICE` |

| [Functions] | [Indications on the FL display] |
|---|---|
| LINE2 ANA | `L2a SERVICE` |
| LINE2 DIG | `L2d SERVICE` |
| TV | `TV SERVICE` |

## ■ Service Test mode connecting point



## 7.1.7 ID NUMBER AND DATA SETTING

**Caution:**
For the DVD players compatible with DVD-RW, for playback of a DVD-RW disc (CPRM), it is necessary that an individual ID number and ID data are set for each player. If the ID number and ID data be not properly set in the manner described below, future operations cannot be guaranteed. The ID number is written on the yellow label at the rear panel of the player.
**If there is no yellow label, before downloading FLASH ROM, take note of the ID number set following the procedures outlined in "ID Number Confirmation Mode" on the next page.**

**Note:** Enter ID numbers while the unit is in Stop mode so that the values set will be immediately written to the flash ROM. The following operations are all made with the TEST MODE remote control unit (GGF1381).

### ■ ID Number Input Mode

① To enter ID Number Input Mode, with no ID number set, such as in a case of immediately after upgrading the firmware, press the ESC key then the STEREO key.

**Note:** If a previous ID number and ID data, such as a factory-preset ID number and ID data, are maintained, the unit enters ID Number Confirmation Mode when the above keys are pressed. However, if only an ID number is maintained, the unit enters ID Data Input Mode.

② Enter a 9-digit ID number. The ID number is also displayed on the LCD display.

③ By pressing the CLEAR key without having input a number, you can exit this mode. Each press of this key after a number has been input deletes one digit.

```
[Player's ID Number Setting]
 ID Number ?
②> - - - - - - - - -

③<CLEAR>  Exit


 Input ID Number !
```

④ After entering all 9 digits, if you press the PLAY key, the unit enters Compare mode. Enter the same ID number again. Only if your two input numbers match, the ID number is set. Compare mode helps eliminate mistyping of the ID number.

**Note:** If you press the PLAY button before inputting a 9-digit ID number, the unit returns to Step ② without doing anything else.

⑤ After entering all 9 digits, if you press the SEARCH key, the unit unconditionally sets the input number as the ID number. Then the unit automatically enters Player's Data Input Mode. (The SEARCH key is not accepted after all 9 digits have been entered.)

```
[Player's ID Number Setting]
 ID Number ?
 > 0 0 0 0 0 0 0 0 1   OK ?

④<PLAY>      Compare Mode
⑤<SEARCH>  Enter

 Input ID Number !
```

⑥ This display appears when the PLAY key is pressed in Step 4. Enter a 9-digit number to compare. The number is also displayed on the LCD display.

⑦ By pressing the CLEAR key without having input a number, the unit returns to Step ② without doing anything else. Each press of this key after a number has been input deletes one digit.

```
[Player's ID Number Setting]
 ID Number ?
    0 0 0 0 0 0 0 0 1
 Compare
⑥> * * * * * * * * *


 Input ID Number !
```

⑧ After entering all 9 digits, if you press the PLAY key, the unit compares the numbers input in Steps ② and ⑥, and only if the numbers match, that number is set as the ID. Then the unit automatically enters ID DATA Input Mode. If the numbers do not match, the disc tray is opened, and the unit exits ID Number Input Mode.

**Note:** If you press the PLAY button before inputting a 9-digit ID number, the unit returns to Step ⑥ without doing anything else.

```
[Player's ID Number Setting]
 ID Number ?
    0 0 0 0 0 0 0 0 1
 Compare
  > 0 0 0 0 0 0 0 0 1 OK?

⑧<PLAY>  Enter

 Input ID Number !
```

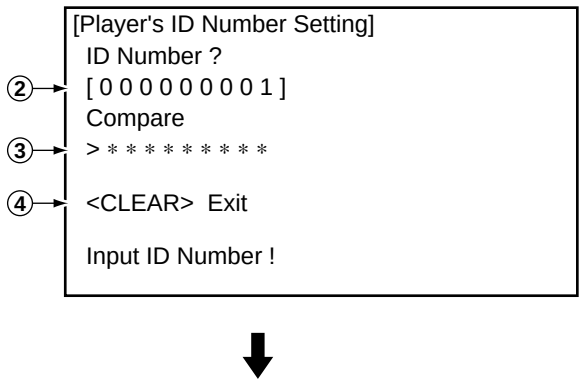
## ID Number Confirmation Mode

① To enter ID Number Confirmation Mode after the ID number and the ID data are set, press the ESC key then the STEREO key.

② The ID number already set is displayed.
(It is also displayed on the LCD display.)

③ Enter a 9-digit number for comparison. This is not required when you only wish to check the ID number visually.
(The number is also displayed on the LCD display.)

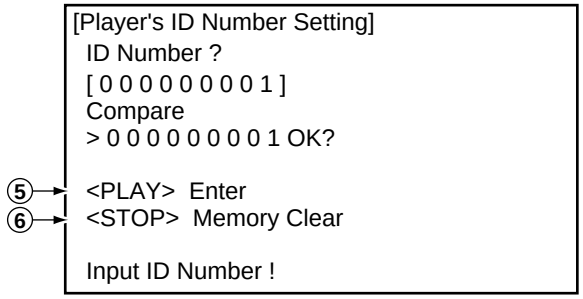
④ By pressing the CLEAR key without having input a number, you can exit this mode. Each press of this key after a number has been input deletes one digit.




⑤ After entering all 9 digits, if you press the PLAY key, the unit compares the number entered in Step ② with the ID number set, and only if the numbers match, the unit automatically exits ID Number Confirmation Mode. If an ID data has not been entered, the unit enters ID DATA Input Mode. If the numbers do not match, the disc tray is opened, and the unit exits ID Number Confirmation Mode.

**Note:** If you press the PLAY button before inputting a 9-digit ID number, the unit returns to Step ④ without doing anything else.

⑥ After entering all 9 digits, if you press the STOP key, the unit compares the number entered in Step ③ with the ID number set, and only if the numbers match, the unit automatically deletes the ID number and exits this mode. If the numbers do not match, the disc tray is opened, and the unit exits this mode. (The STOP key is not accepted after all 9 digits have been entered.)




### • Indication of an ID number already set

An ID number already set is displayed in the following cases:

1) When the ESC key then the CLEAR key are pressed, user settings are cleared, then the ID number set is displayed on the screen. In this case, the ID number is not displayed on the LCD display.
2) When the unit enters ID Number Confirmation Mode by your pressing the ESC key then the STEREO key, the ID number set is displayed. In this case, the ID number is also displayed on the LCD display.
If you only need to confirm the ID number, you can exit this mode by pressing the CLEAR key or turning off the power.

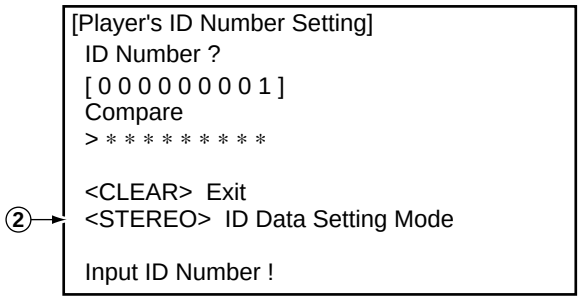
### • Indication when no ID number is set

If no ID number is set, the message "No ID Number!" flashes on the screen and LCD display for a few seconds after the power is turned on or during Stop mode.

## ID DATA Input Mode

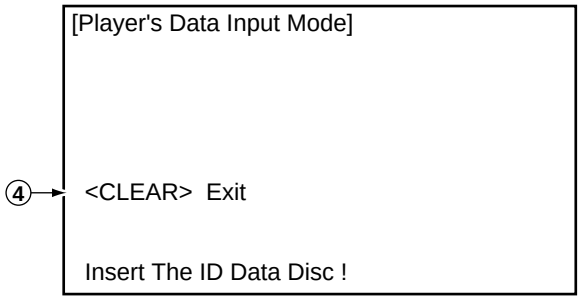
① To enter ID DATA Input Mode, with the ID number set, press the ESC key then the STEREO key.

② When the STEREO key is pressed, the unit enters ID DATA Input Mode.



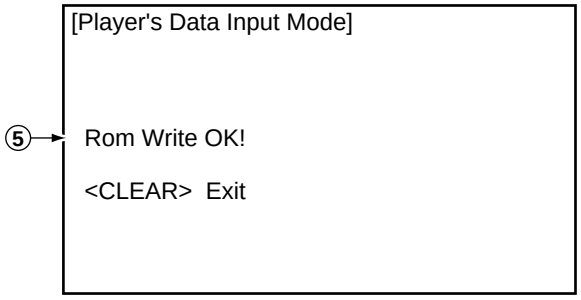

③ If the DVD DATA DISC (GGV1085) is loaded in this mode, the unit automatically starts reading the data.
(If the ID DISC has already been loaded, the unit does not start reading the data. In this case, open then close the tray.)

④ To exit this mode, press the CLEAR key. While data are being read from the DVD DATA DISC (GGV1085), you cannot exit this mode.

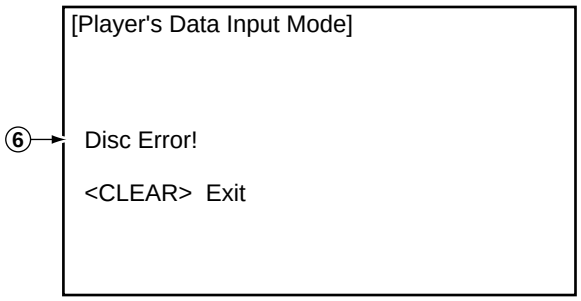



⑤ When writing of the data read from the disc to flash ROM is completed, "Rom Write OK!" is displayed. After seeing this message, you can exit this mode by pressing the CLEAR key.

**Note:** Whether or not the data have been written to flash ROM can be confirmed by watching for the message "Rom Write OK!" being displayed after the disc is read.




⑥ If the data cannot be read from the disc, "Disc Error!" is displayed on the screen, and the disc is ejected.




**• Indication when the data have not been set**
If no ID data are set after the ID number is changed, the message "NO ID DATA" flashes on the screen and LCD display for a few seconds after the power is turned on or during Stop mode.

## 7.1.8 TROUBLE SHOOTING

### Microcomputer Section (CONTROL Assy : IC5501)

| Symptom | Possible Cause | Check Method |
|---|---|---|
| • The unit cannot be turned on. | The microcomputer was not reset. | Check if the level of the terminal XRESET (Pin 8) is "H." If it is not, check the RESET circuit. |
| | The AC pulse is not input. | Check if the AC pulse is input to Pin 4 of the AC input terminal. If it is not, check the AC pulse generation circuit. |
| | The oscillation circuit of the microcomputer does not function. | The microcomputer or the oscillation circuit is broken. Change the microcomputer or the oscillation circuit. |
| The unit shuts itself off soon after it is turned on. | • If the Function is DVD, the voltage of the VDET input (Pin 17) is either 0.5 Vdd* or less or 0.85 Vdd* or more.<br>• The voltage of the PROTECT input (Pin 22) is 0.71 Vdd* or less. | If the voltage at Pin 17 of the VDET terminal of the microcomputer is either 0.5 Vdd or less or 0.85 Vdd or more, adjust so that it stays between 0.5 and 0.85 Vdd. |
| • DVD does not operate at all.<br>• Time is not displayed in LCD display during DVD function. | Communication with the DVD microcomputer has not been established. | • Check that the terminal (Pins 23-25, 29, and 30) for communication with the DVD microcomputer is live, and if it is not, check if the flexible cable is disconnected.<br>• Check if an "H" signal is output to Pin 93 of the XDVDRST terminal. |
| All operation keys are disabled. | The unit recognizes that an operation key has already been pressed. | If no operation key has been pressed, check if the voltage at Pins 18 of the KEY input terminal is 5 V. If it is not, check if the operation switch on the line is in failure. |

* Vdd= Approx. 5V (depending on the unit)
ex.) 0.85Vdd= 0.85 × 5 (V)
= 4.25 (V)

## DVD Section

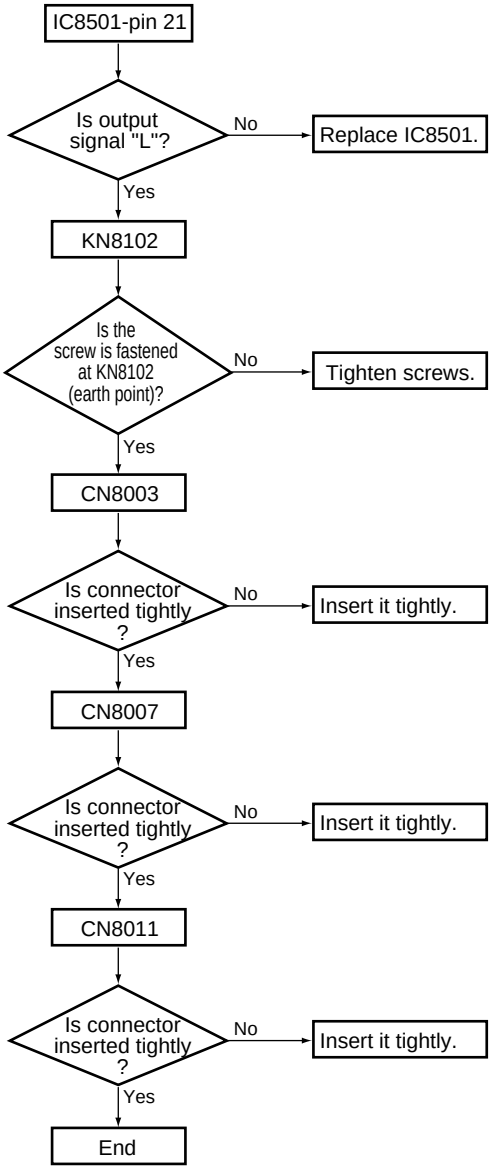
| No. | Symptoms | Diagnosis Contents | Possible Defective Points |
|---|---|---|---|
| 1 | An opening screen is not displayed on the monitor (The LCD display lights. The mechanism does not work.) | Is the level at both IC5501-pin 93 (XDVDRST) and pin 1(DVD ON/OFF) on the CONTROL Assy "H" ? | µcom (CONTROL IC5501) |
| | | Check the voltage of CN901-pin 28 and 29 (VPR+8) on the DVDM Assy. | DVDM Assy CN901 |
| | | Check that the following voltages are output :<br>IC411-pin 3 : 1.8V, IC421-pin 3 : 1.8V and IC431-pin 1 : 5V on the DVDM Assy | Each regulator on the DVDM Assy |
| | | Are resonators (27MHz, 20MHz) on the DVDM Assy oscillating ? | Crystal resonator<br>(DVDM Assy X601 and X301) |
| | | Refer to contents of an FE error displayed on the LCD display.<br>(SRAM defectiveness, I2C communication line defectiveness, etc.) | FRONT END IC<br>(DVDM IC301) |
| | | • Is a signal input into IC601-pin 132 (CE3) on the DVDM Assy ?<br>(Is a signal fluctuating for several seconds after the power is turned on ?)<br>→ Communication with flash ROM<br>• Are the signals input into IC602-pin 16 (SMIWE), pin 19 (SMICS0) and pin 38 (SMICLK) on the DVDM Assy ?<br>(Is a signal fluctuating ?)<br>→ Communication with flash ROM | • BACK END IC (DVDM IC601)<br>• Flash ROM (DVDM IC603)<br>• 64M SDRAM (DVDM IC602) |
| | | Is a signal output from IC603-pin 28 (CPU_OE) on the DVDM Assy?<br>(Is a signal fluctuating for several seconds after the power is turned on ?) | • BACK END IC (DVDM IC601)<br>• Flash ROM (DVDM IC603) |
| | | Is a signal input into IC5501-pin 67 (DVDACK) on the CONTROL Assy ?<br>(Is a signal fluctuating ?) | µcom (CONTROL IC5501) |
| | | Is a signal output from IC5501-pin 29 and 30 (SYS_1, 2) on the AF Assy ?<br>(Is a signal fluctuating in the range of 0-5V ?) | µcom (CONTROL IC5501) |
| | | Are the signals output from IC5501-pin 23, 24 and 25 on the CONTROL Assy? (in the range of 0-5V) | µcom (AF IC5501) – BACK END IC (DVDM IC601) communication line |
| 2 | An opening screen is not displayed on the monitor (The LCD display lights. The mechanism does not work.) | Check the video signal path between BACK END IC (DVDM IC601) and video-out terminal<br>(see the block diagram) | DVDM Assy<br>• Video circuit<br>• after BACK END IC (IC601) |
| 3 | A tray cannot be opened. (An opening screen is displayed on the monitor) | • Are wires of CN103 on the DVDM Assy disconnected or damaged ? | Connector / wire<br>LOADING SW (LOAB S101) |
| | | • Is a LOAD-DRVC signal reaching ?<br>• Does the voltage of CN105 pin 1 change by pressing the Inside switch | BACK END IC (DVDM IC601)<br><br>Inside switch |

| No. | Symptoms | Diagnosis Contents | Possible Defective Points |
|---|---|---|---|
| 4 | Playback impossible (no focusing) | Are the signals output from IC101-pin 34 (F_DRV) and pin 35 (F_RTN) on the DVDM Assy ? | FTS Driver IC (DVDM IC101) |
| | | Does 650-nm LD emit light ?<br>Does a pickup lens move up / down ?<br>Does an actuator spring bend ? | Pickup |
| | | • Are plastic parts damaged? Or is a shaft detached?<br>• Is the turntable detached or tilted? | Mechanism section |
| | | Is flexible cable of CN101 on the DVDM Assy disconnected or damaged ? | Flexible cable / connector |
| | | Is signal output from IC301-pin 33 (FACT) on the DVDM Assy ?<br>(Device control of about 2.6 V is output usually. It is fluctuated by about ± 100 mV with focus up / down.) | FRONT END IC (DVDM IC301) |
| 5 | Playback impossible (Spindle does not turn) | Are the signals output from IC101-pin 12 (A3), pin 13 (A2) and pin 14 (A1) on the DVDM Assy ?<br>Is pin 41 fixed LOW and is pin 38 fixed HIGH ? | FTS Driver IC (DVDM IC101) |
| | | Is there any part detached from the spindle motor?<br>Or Is there any foreign object lodged in it? | Mechanism section<br>(Spindle motor) |
| | | Are wires of CN105 (DVDM Assy) disconnected or damaged ? | Flexible cable / connector |
| | | Is signal output from IC301-pin 44 (SPDL_PDM) on the DVDM Assy ? | FRONT END IC (DVDM IC301) |
| 6 | Playback impossible (Playback stops) | Does 650-nm LD deteriorate ?<br>If the voltage at both ends of R201 on the DVDM Assy is 0.7 V or more, the 650-nm LD is definitely deteriorated. | 650-nm LD deteriorated.<br>(When playback of a DVD is impossible) |
| | | Does 780-nm LD deteriorate ?<br>If the voltage at both ends of R211 on the DVDM Assy is 1.5 V or more, the 780-nm LD is definitely deteriorated. | 780-nm LD deteriorated.<br>(When playback of CD is impossible) |
| | | Is there abnormality in FG waveform ? | FG output : FTS Driver IC (DVDM IC101) |
| | | Are there scratches or dirt on the disc ? | Disc |
| 7 | Picture disturbance during playback (block noise, freeze, other) | Are there scratches or dirt on the disc ? | Disc |
| | | Is there a problem with the format of the disc? | Disc |
| 8 | No sound (Picture is normal) | | |
| | | Is signal output from DOUT signal (CN901-pin 21) on the DVDM Assy ? | BACK END IC (DVDM IC601) |

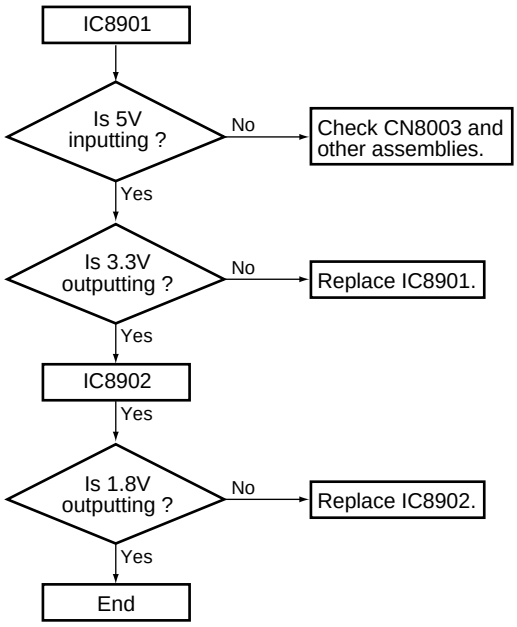
## 7.1.9 DSP TROUBLE SHOOTING

- When a sound is not out in the surround mode with the digital signal input.
- Suppose C,R parts to be poor contact and that is not damaged.
- This shows failure analysis of DSP Assy.

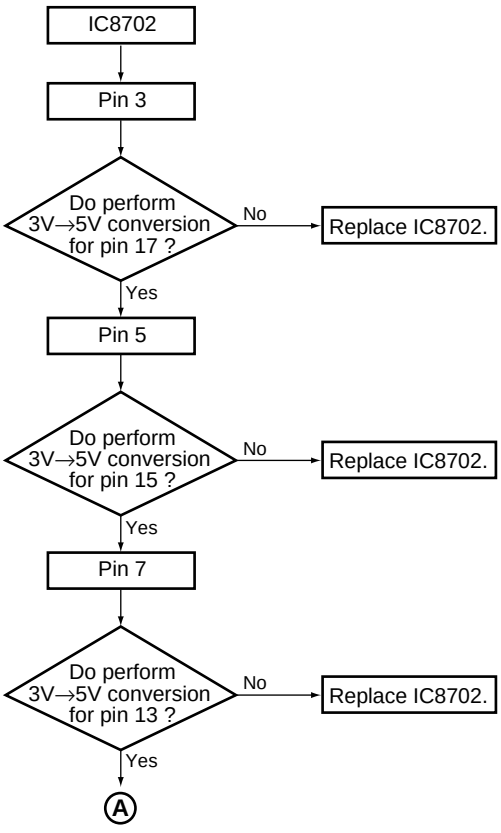
### Step 1

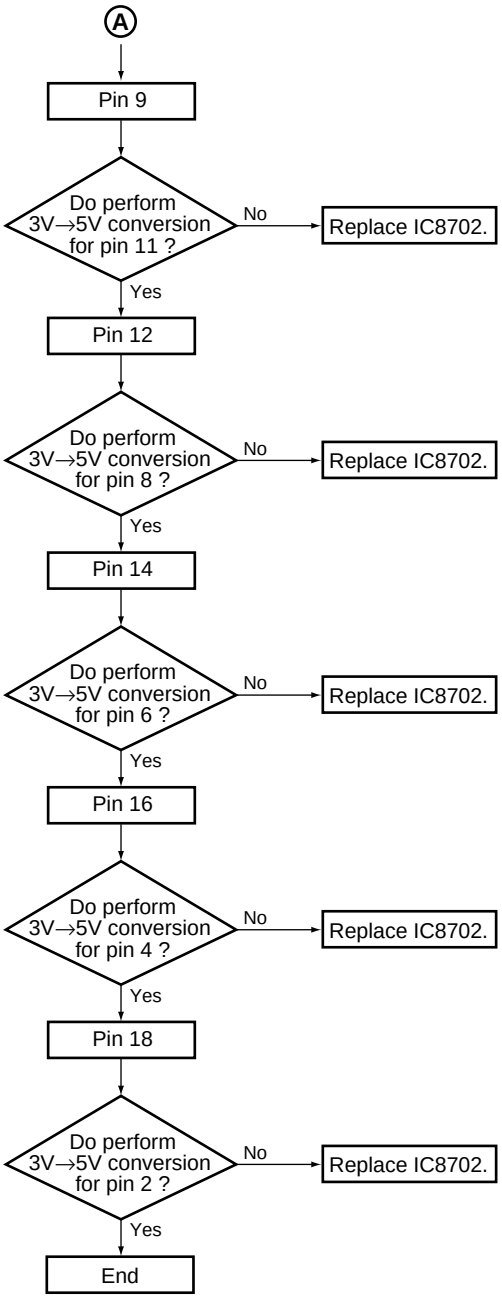


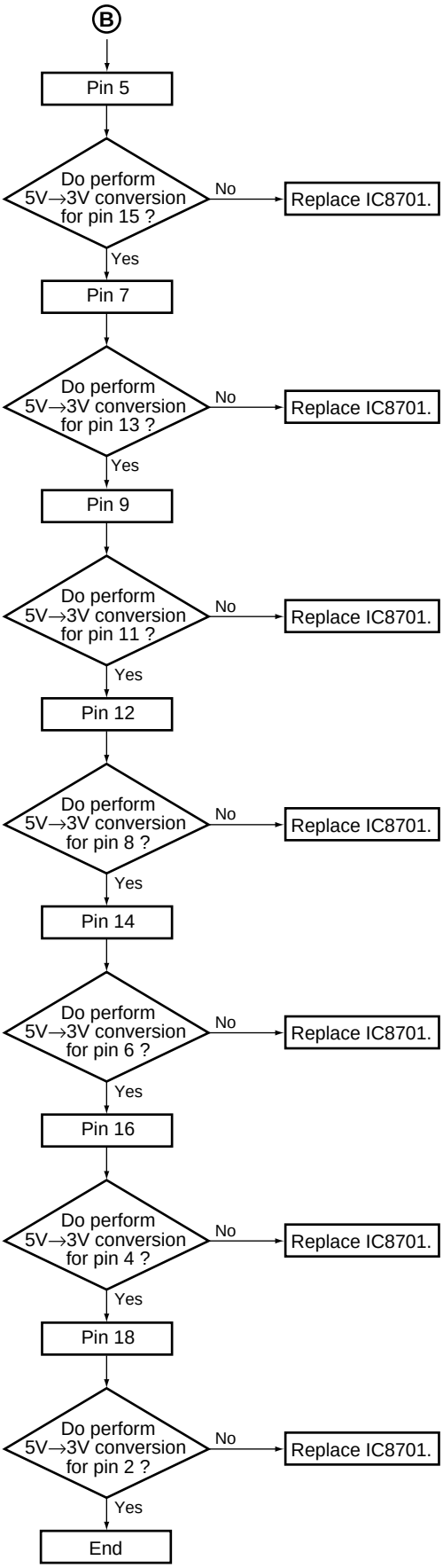

### Step 2



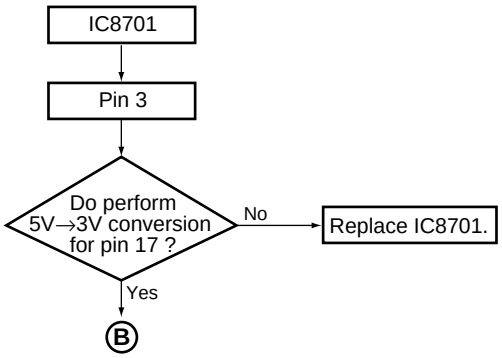

### Step 3



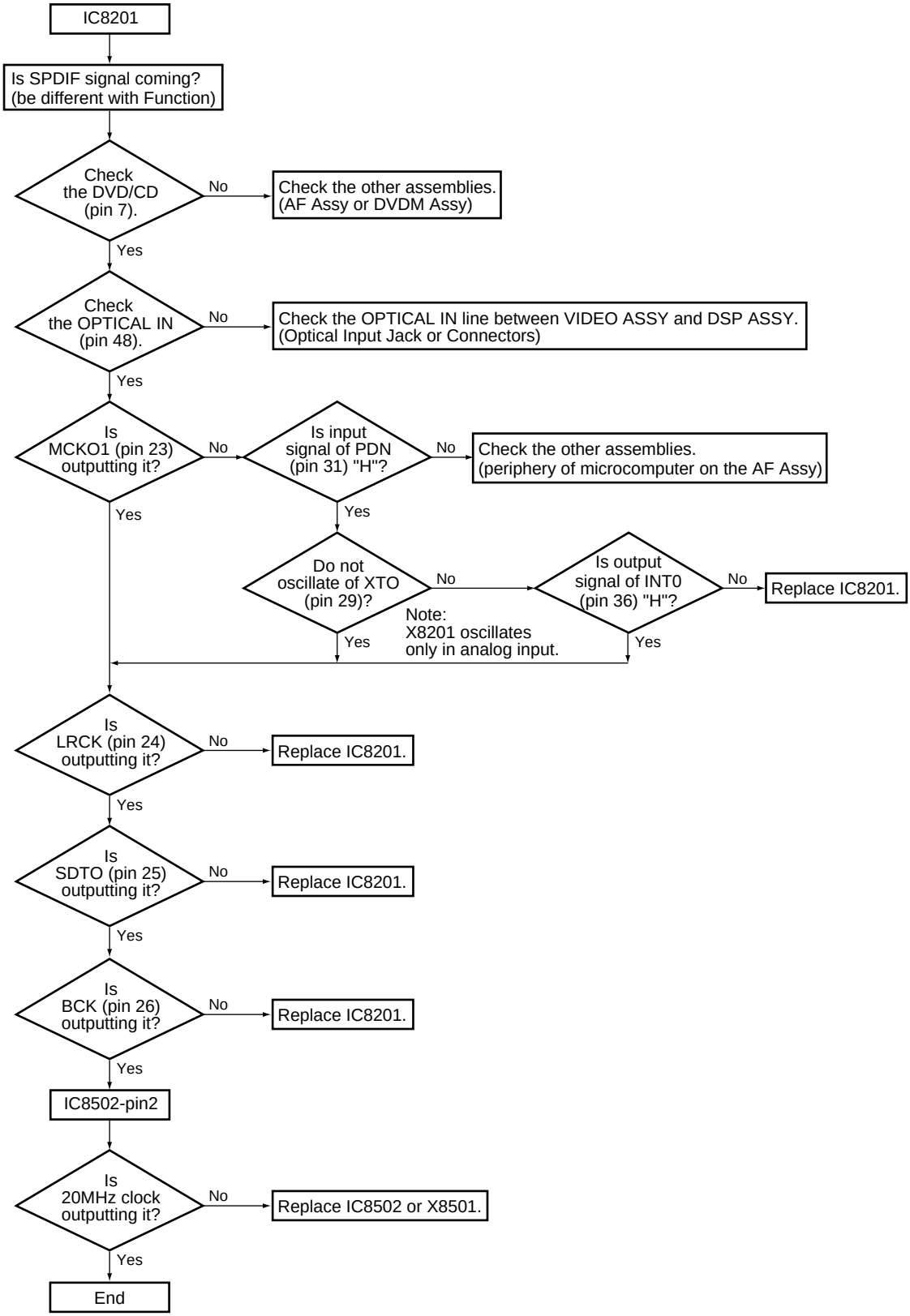

A
Pin 9
Do perform 3V→5V conversion for pin 11 ?
No
Replace IC8702.
Yes
Pin 12
Do perform 3V→5V conversion for pin 8 ?
No
Replace IC8702.
Yes
Pin 14
Do perform 3V→5V conversion for pin 6 ?
No
Replace IC8702.
Yes
Pin 16
Do perform 3V→5V conversion for pin 4 ?
No
Replace IC8702.
Yes
Pin 18
Do perform 3V→5V conversion for pin 2 ?
No
Replace IC8702.
Yes
End


B
Pin 5
Do perform 5V→3V conversion for pin 15 ?
No
Replace IC8701.
Yes
Pin 7
Do perform 5V→3V conversion for pin 13 ?
No
Replace IC8701.
Yes
Pin 9
Do perform 5V→3V conversion for pin 11 ?
No
Replace IC8701.
Yes
Pin 12
Do perform 5V→3V conversion for pin 8 ?
No
Replace IC8701.
Yes
Pin 14
Do perform 5V→3V conversion for pin 6 ?
No
Replace IC8701.
Yes
Pin 16
Do perform 5V→3V conversion for pin 4 ?
No
Replace IC8701.
Yes
Pin 18
Do perform 5V→3V conversion for pin 2 ?
No
Replace IC8701.
Yes
End

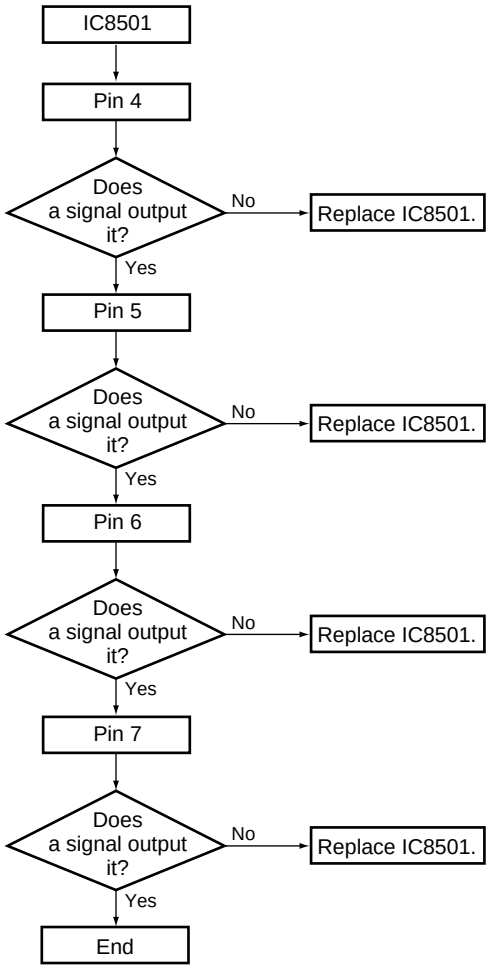
**Step 4**


IC8701
Pin 3
Do perform 5V→3V conversion for pin 17 ?
No
Replace IC8701.
Yes
B

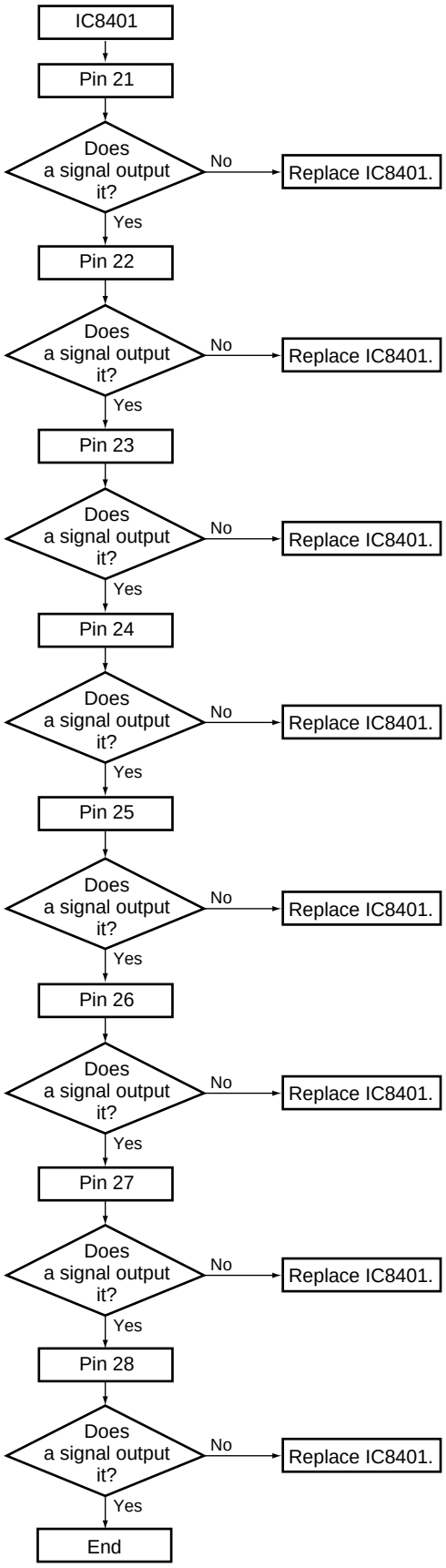
**Step 5**


IC8201
Is SPDIF signal coming?
(be different with Function)
Check
the DVD/CD
(pin 7).
No
Check the other assemblies.
(AF Assy or DVDM Assy)
Yes
Check
the OPTICAL IN
(pin 48).
No
Check the OPTICAL IN line between VIDEO ASSY and DSP ASSY.
(Optical Input Jack or Connectors)
Yes
Is
MCKO1 (pin 23)
outputting it?
No
Is input
signal of PDN
(pin 31) "H"?
No
Check the other assemblies.
(periphery of microcomputer on the AF Assy)
Yes
Yes
Do not
oscillate of XTO
(pin 29)?
No
Is output
signal of INT0
(pin 36) "H"?
No
Replace IC8201.
Note:
X8201 oscillates
only in analog input.
Yes
Yes
Is
LRCK (pin 24)
outputting it?
No
Replace IC8201.
Yes
Is
SDTO (pin 25)
outputting it?
No
Replace IC8201.
Yes
Is
BCK (pin 26)
outputting it?
No
Replace IC8201.
Yes
IC8502-pin2
Is
20MHz clock
outputting it?
No
Replace IC8502 or X8501.
Yes
End

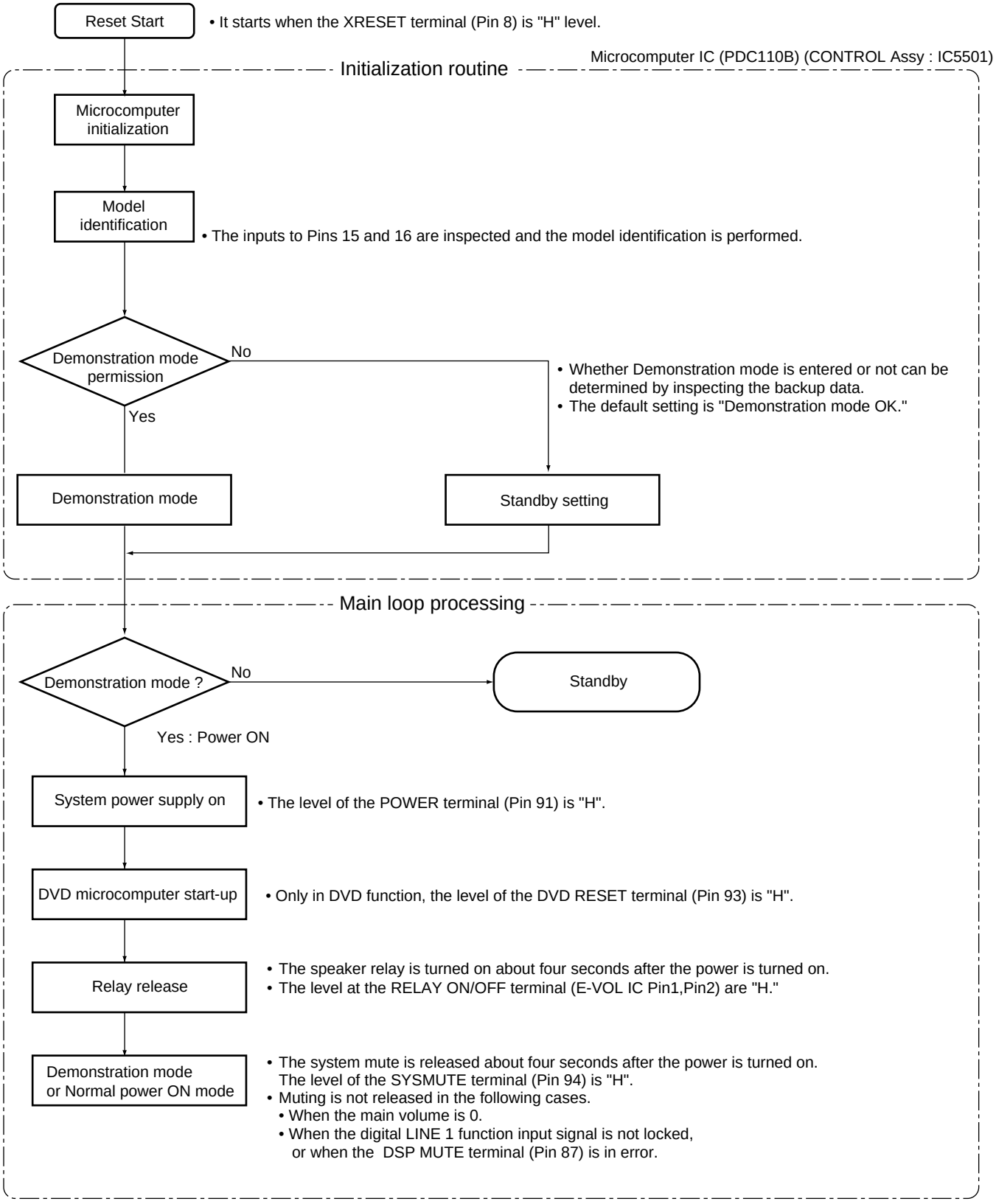
## Step 6


IC8501
Pin 4
Does a signal output it?
No
Replace IC8501.
Yes
Pin 5
Does a signal output it?
No
Replace IC8501.
Yes
Pin 6
Does a signal output it?
No
Replace IC8501.
Yes
Pin 7
Does a signal output it?
No
Replace IC8501.
Yes
End

## Step 7

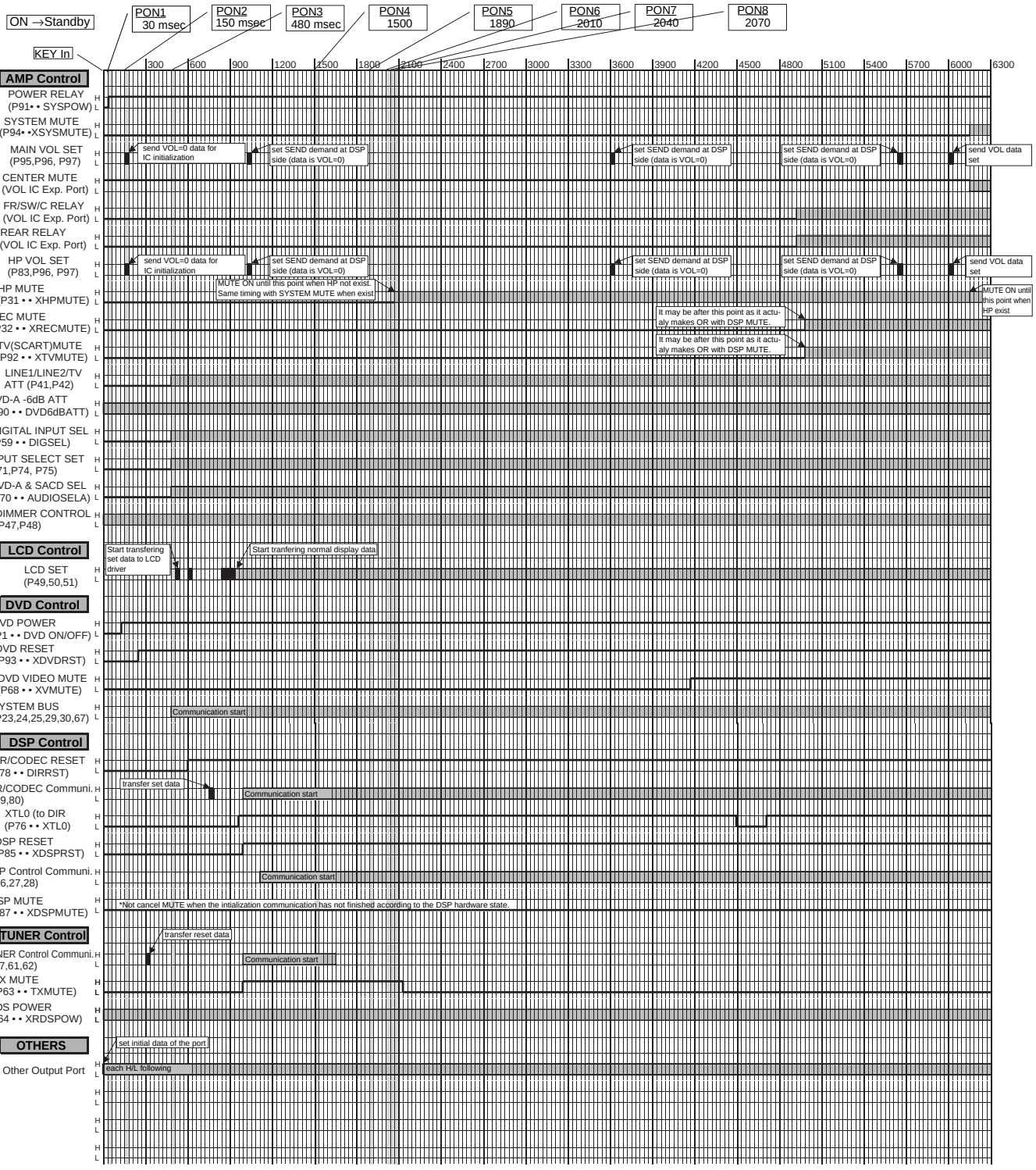

IC8401
Pin 21
Does a signal output it?
No
Replace IC8401.
Yes
Pin 22
Does a signal output it?
No
Replace IC8401.
Yes
Pin 23
Does a signal output it?
No
Replace IC8401.
Yes
Pin 24
Does a signal output it?
No
Replace IC8401.
Yes
Pin 25
Does a signal output it?
No
Replace IC8401.
Yes
Pin 26
Does a signal output it?
No
Replace IC8401.
Yes
Pin 27
Does a signal output it?
No
Replace IC8401.
Yes
Pin 28
Does a signal output it?
No
Replace IC8401.
Yes
End

## 7.1.10 SEQUENCE AFTER POWER ON


Reset Start
• It starts when the XRESET terminal (Pin 8) is "H" level.
Microcomputer IC (PDC110B) (CONTROL Assy : IC5501)
Initialization routine
Microcomputer initialization
Model identification
• The inputs to Pins 15 and 16 are inspected and the model identification is performed.
Demonstration mode permission
No
Yes
• Whether Demonstration mode is entered or not can be determined by inspecting the backup data.
• The default setting is "Demonstration mode OK."
Demonstration mode
Standby setting
Main loop processing
Demonstration mode ?
No
Standby
Yes : Power ON
System power supply on
• The level of the POWER terminal (Pin 91) is "H".
DVD microcomputer start-up
• Only in DVD function, the level of the DVD RESET terminal (Pin 93) is "H".
Relay release
• The speaker relay is turned on about four seconds after the power is turned on.
• The level at the RELAY ON/OFF terminal (E-VOL IC Pin1,Pin2) are "H."
Demonstration mode or Normal power ON mode
• The system mute is released about four seconds after the power is turned on. The level of the SYSMUTE terminal (Pin 94) is "H".
• Muting is not released in the following cases.
• When the main volume is 0.
• When the digital LINE 1 function input signal is not locked, or when the DSP MUTE terminal (Pin 87) is in error.

- If no pulse is input to the AC terminal (Pin 4) for about 60 msec, the microcomputer becomes in Memory Backup mode, it will not do any processing.
- The unit will recover from Memory Backup mode if a reset command is input to the XRESET terminal (Pin 8).

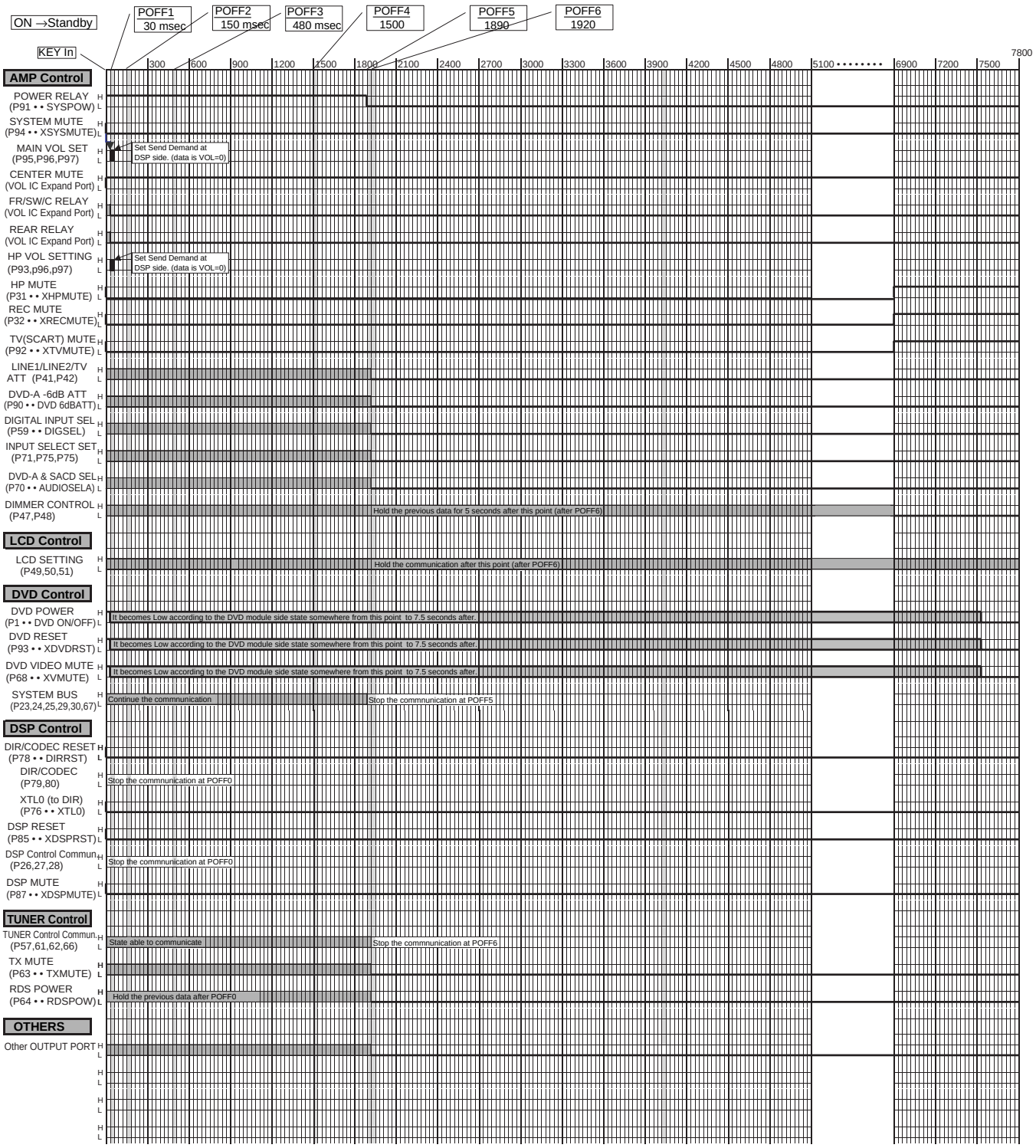
# [ STANDBY ON TIMING CHART ]


ON →Standby
PON1 30 msec
PON2 150 msec
PON3 480 msec
PON4 1500
PON5 1890
PON6 2010
PON7 2040
PON8 2070
KEY In
300 600 900 1200 1500 1800 2100 2400 2700 3000 3300 3600 3900 4200 4500 4800 5100 5400 5700 6000 6300
AMP Control
POWER RELAY (P91• • SYSPOW)
SYSTEM MUTE (P94• •XSYSMUTE)
MAIN VOL SET (P95,P96, P97)
send VOL=0 data for IC initialization
set SEND demand at DSP side (data is VOL=0)
set SEND demand at DSP side (data is VOL=0)
set SEND demand at DSP side (data is VOL=0)
send VOL data set
CENTER MUTE (VOL IC Exp. Port)
FR/SW/C RELAY (VOL IC Exp. Port)
REAR RELAY (VOL IC Exp. Port)
HP VOL SET (P83,P96, P97)
HP MUTE (P31 • • XHPMUTE)
MUTE ON until this point when HP not exist.
Same timing with SYSTEM MUTE when exist
MUTE ON until this point when HP exist
REC MUTE (P32 • • XRECMUTE)
TV(SCART)MUTE (P92 • • XTVMUTE)
It may be after this point as it actu-aly makes OR with DSP MUTE.
LINE1/LINE2/TV ATT (P41,P42)
DVD-A -6dB ATT (P90 • • DVD6dBATT)
DIGITAL INPUT SEL (P59 • • DIGSEL)
INPUT SELECT SET (P71,P74, P75)
DVD-A & SACD SEL (P70 • • AUDIOSELA)
DIMMER CONTROL (P47,P48)
LCD Control
Start transfering set data to LCD driver
Start tranfering normal display data
LCD SET (P49,50,51)
DVD Control
DVD POWER (P1 • • DVD ON/OFF)
DVD RESET (P93 • • XDVDRST)
DVD VIDEO MUTE (P68 • • XVMUTE)
SYSTEM BUS (P23,24,25,29,30,67)
Communication start
DSP Control
DIR/CODEC RESET (P78 • • DIRRST)
transfer set data
DIR/CODEC Communi. (P79,80)
Communication start
XTL0 (to DIR (P76 • • XTL0)
DSP RESET (P85 • • XDSPRST)
DSP Control Communi. (P26,27,28)
Communication start
DSP MUTE (P87 • • XDSPMUTE)
*Not cancel MUTE when the intialization communication has not finished according to the DSP hardware state.
TUNER Control
transfer reset data
TUNER Control Communi. (P57,61,62)
Communication start
TX MUTE (P63 • • TXMUTE)
RDS POWER (P64 • • XRDSPOW)
OTHERS
set initial data of the port
Other Output Port
each H/L following

## [ STANDBY ON SEQUENCE ]

| Function | Set Time from Former Step | Passing Time | Detail about the Control |
|---|---|---|---|
| SY_PON0 | ———— | 0 msec | **Start the POWER ON Each Initial Setting ①**<br>• Set the MASK FLAG of all keys<br>• Set the MASK FLAG of normal key<br>• POWER Lines MUTE ON (SYSYTEM MUTE REQUEST)<br>• MUTING FLAG CLEAR (SYSTEM MUTE REQUEST)<br>• VOLUME Lines MUTE REQUEST CLEAR (SYSTEM MUTE REQUEST)<br>• DSP MUTE REQUEST CLEAR(SYSTEM MUTE REQUEST)<br>• AMP Lines MUTE REQUEST CLEAR (SYSTEM MUTE REQUEST)<br>• TUNER MUTE REQUEST CLEAR (SYSTEM MUTE REQUEST)<br>• EMERGENCY POWER OFF FLAG CLEAR<br>• LCD Driver STAND-BY<br>• Set the TIMER for canceling the SP-Relay (5 sec)<br>• Set the TIMER for starting the PROTECT Process (1.5 sec)<br>• PROTECT FLAG CLEAR<br>• REC MUTE ON (Pin No.32 : L)<br>• HEADPHONE MUTE ON (Pin No.31 : L) |
| SY_PON1 | + 30 msec | 30 msec | **Each Initial Setting ②**<br>• SYSTEM POWER ON (Pin No.91 : L)<br>• Set the One-Shot Display of " WELCOME " (display time : 3.5 sec) |
| SY_PON2 | + 120 msec | 150 msec | **Each Initial Setting ③**<br>• Set +5V ON (the Power is stabilized) FLAG<br>• Transfer the initial data to the MAIN VOLUME IC.<br>• Transfer the initial data to the HEADPHONE IC. |
| SY_PON3 | + 330 msec | 480 msec | **Each Initial Setting ④**<br>• Start transfering to the LCD driver if the remote control port data is High.<br>• Set the DIGITAL INPUT (Pin No.59)<br>• Set the INPUT FUNCTION (Selector : BU4051) (Pin No.71,74,75)<br>• Start the BUS communication |
| SY_PON4 | + 1020 msec | 1500 msec | **Each Initial Setting ④** |
| SY_PON5 | + 390 msec | 1890 msec | **Each Initial Setting ⑤** |
| SY_PON6 | + 120 msec | 2010 msec | **Each Initial Setting ⑥** |
| SY_PON7 | + 30 msec | 2040 msec | **Each Initial Setting ⑦**<br>• Clear the MASK FLAG of all keys.<br>• Clear the MASK FLAG of normal key.<br>• POWER Lines MUTE OFF (SYSTEM MUTE REQUEST) |
| SY_PON8 | + 30 msec | 2070 msec | **POWER ON Finished** |

# [ STANDBY OFF TIMING CHART ]


ON →Standby
KEY In
POFF1 30 msec
POFF2 150 msec
POFF3 480 msec
POFF4 1500
POFF5 1890
POFF6 1920
300
600
900
1200
1500
1800
2100
2400
2700
3000
3300
3600
3900
4200
4500
4800
5100
6900
7200
7500
7800
AMP Control
POWER RELAY (P91 • • SYSPOW)
SYSTEM MUTE (P94 • • XSYSMUTE)
MAIN VOL SET (P95,P96,P97)
Set Send Demand at DSP side. (data is VOL=0)
CENTER MUTE (VOL IC Expand Port)
FR/SW/C RELAY (VOL IC Expand Port)
REAR RELAY (VOL IC Expand Port)
HP VOL SETTING (P93,p96,p97)
Set Send Demand at DSP side. (data is VOL=0)
HP MUTE (P31 • • XHPMUTE)
REC MUTE (P32 • • XRECMUTE)
TV(SCART) MUTE (P92 • • XTVMUTE)
LINE1/LINE2/TV ATT (P41,P42)
DVD-A -6dB ATT (P90 • • DVD 6dBATT)
DIGITAL INPUT SEL (P59 • • DIGSEL)
INPUT SELECT SET (P71,P75,P75)
DVD-A & SACD SEL (P70 • • AUDIOSELA)
DIMMER CONTROL (P47,P48)
Hold the previous data for 5 seconds after this point (after POFF6)
LCD Control
LCD SETTING (P49,50,51)
Hold the communication after this point (after POFF6)
DVD Control
DVD POWER (P1 • • DVD ON/OFF)
It becomes Low according to the DVD module side state somewhere from this point to 7.5 seconds after.
DVD RESET (P93 • • XDVDRST)
It becomes Low according to the DVD module side state somewhere from this point to 7.5 seconds after.
DVD VIDEO MUTE (P68 • • XVMUTE)
It becomes Low according to the DVD module side state somewhere from this point to 7.5 seconds after.
SYSTEM BUS (P23,24,25,29,30,67)
Continue the commnunication
Stop the commnunication at POFF5
DSP Control
DIR/CODEC RESET (P78 • • DIRRST)
DIR/CODEC (P79,80)
Stop the commnunication at POFF0
XTL0 (to DIR) (P76 • • XTL0)
DSP RESET (P85 • • XDSPRST)
DSP Control Commun (P26,27,28)
Stop the commnunication at POFF0
DSP MUTE (P87 • • XDSPMUTE)
TUNER Control
TUNER Control Commun (P57,61,62,66)
State able to communicate
Stop the commnunication at POFF6
TX MUTE (P63 • • TXMUTE)
RDS POWER (P64 • • RDSPOW)
Hold the previous data after POFF0
OTHERS
Other OUTPUT PORT
H
L

## [ STANDBY OFF SEQUENCE ]

| Function | Set Time from Former Step | Passing Time | Detail about the Control |
|---|---|---|---|
| SY_POFF0 | ———— | 0 msec | **Start the POWER OFF Each Initial Setting ①**<br>• Set the MASK FLAG of all keys<br>• Set the MASK FLAG of normal key<br>• POWER Lines MUTE ON (SYSYTEM MUTE REQUEST)<br>• MUTING FLAG CLEAR (SYSTEM MUTE REQUEST)<br>• Set the transfer demand of the VOLUME DATA to the DSP module. (The DSP module controls the MAIN VOLUME.)<br>• Set the Counter for not coming DVD POWER OFF information.(20sec)<br>• MENU clear<br>• Clear the demand of One-Shot Display.<br>• Clear the RAM relative to PROTECT if in SERVICE TEST MODE.<br>• Force to set the each data to the Factory Setting state in the TEST MODE except the SERVICE TEST MODE.<br>• Clear the TEST MODE FLAG except the LINE TEST MODE<br>• Clear the RAM FLAG relative to the TIMER.<br>• DEMO CLEAR |
| SY_POFF1 | + 30 msec | 30 msec | **Each Initial Setting ②**<br>• If it is not the Emergency POWER OFF,<br>Set the Admission FLAG of the SP-Realy OFF<br>Check if the DVD is POWER OFF OK |
| SY_POFF2 | + 120 msec | 150 msec | **Each Initial Setting ③** |
| SY_POFF3 | + 330 msec | 480 msec | **Each Initial Setting ④** |
| SY_POFF4 | + 1020 msec | 1500 msec | **Each Initial Setting ④** |
| SY_POFF5 | + 390 msec | 1890 msec | **Each Initial Setting ⑤**<br>• Clear 5V ON (the Power is stabilized) FLAG<br>• SYSTEM POWER OFF (Pin No.91 : L)<br>• DVD DEBUG MODE CLEAR<br>• Finished the BUS communication. |
| SY_POFF6 | + 30 msec | 1920 msec | **POWER OFF Finished** (passes every loop in the POWER OFF)<br>• Clear the MASK FLAG of all keys.<br>• Hold to set the MASK FLAG of normal key<br>• Clear the Emergency POWER OFF FLAG<br>• Clear the Admission FLAG of SP-Relay OFF<br>• POWER Lines MUTE OFF (SYSTEM MUTE REQUEST)<br>• Clear the LINE TEST MODE FLAG<br>• REC MODE OFF<br>• PORT Process in the POWER OFF<br>• Only when the 5 sec after point after the POWER OFF,<br>REC MUTE OFF (Pin No. 32 : H)<br>HEADPHONE MUTE OFF (Pin No.31 : H)<br>TV MUTE OFF (Pin No.92 : H)<br>Set the DIMMER PORT OFF (Pin No. 47,48 : H) |

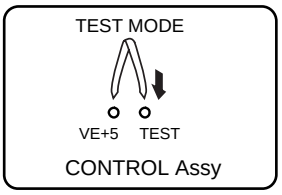
## 7.1.11 SINGLE OPERATION METHOD

**• Please connect DISPLAY UNIT (AXX7163) in order to use Remote Control Unit.**

**TEST MODE : ON** Service TEST mode

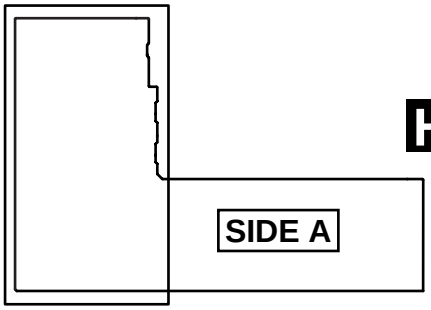
Turn off power switch of DC power supply.

Connect each power supply firmly stabilizing as shown in the figure below and shortcircuit the 3 GND points.

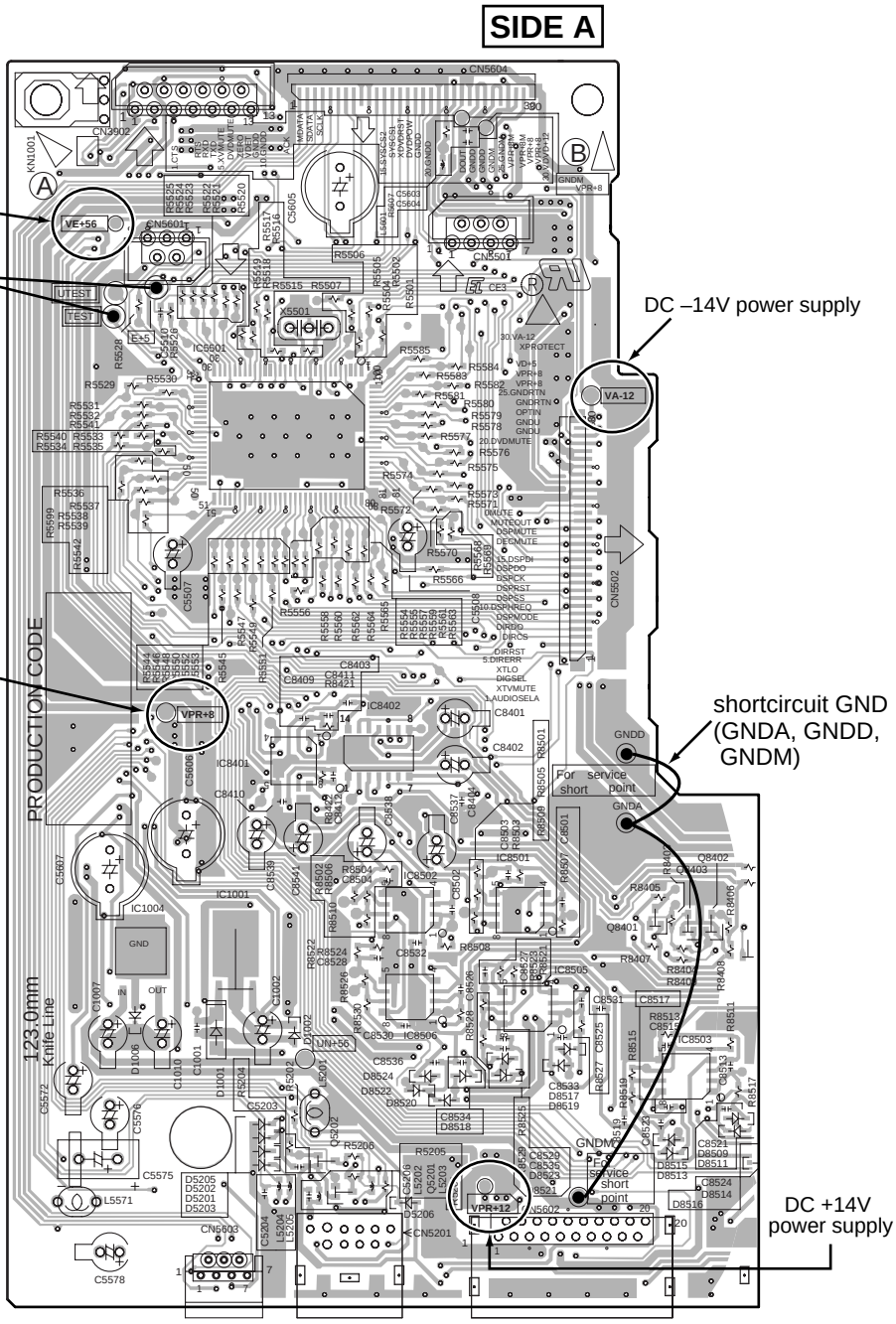



Turn on power switch of DC power supply.

**TEST MODE**




## H CONTROL ASSY




**TEST MODE : STOP**

Turn off power switch of DC power supply.

## 7.1.12 PROTECTION CIRCUIT

If the TIMER LED on the front panel flashes, check the protection circuit.
Note: If the protection circuit activates, the unit will not recover for 60 seconds even if the AC power cord is disconnected then reconnected. If you activate Service Test mode, the protection circuit becomes invalid, which makes diagnosis easy. (To activate Service Test mode, while connecting STEST port (IC5501 Pin43) to "+5V", connect AC power cord.)
There are three types of operations for the protection circuit, which are indicated on the FL display when Service Test mode is entered:

PRTCT WNG: The unit was shut down because of an abnormality in the AMP system. (The PROTECT line operates at the MID level.)
PRTCT ERR: The unit was shut down because of a failure in the AMP system. (The PROTECT line operates at the LO level.)
DVD PRTECT: The unit was shut down because of a failure in the DVD system. (The VDET line operates at the HI or LO level.)

### ■ Conditions for the protect circuit operations

| | Voltage | | Conditions | FL display in Service Test mode |
|---|---|---|---|---|
| PROTECT | HI level | >3.55V | Normal | |
| | MID level | 1.8V - 3.5V | The unit is shut down because of an abnormality. | PRTCT WNG |
| | LO level | <1.8V | The unit is shut down because of a failure. | PRTCT ERR |
| VDET | HI level | >4.25V | The unit is shut down because of a failure. | DVD PRTECT |
| | MID level | 3.3V | Normal | |
| | LO level | <2.5V | The unit is shut down because of an abnormality. | DVD PRTECT |

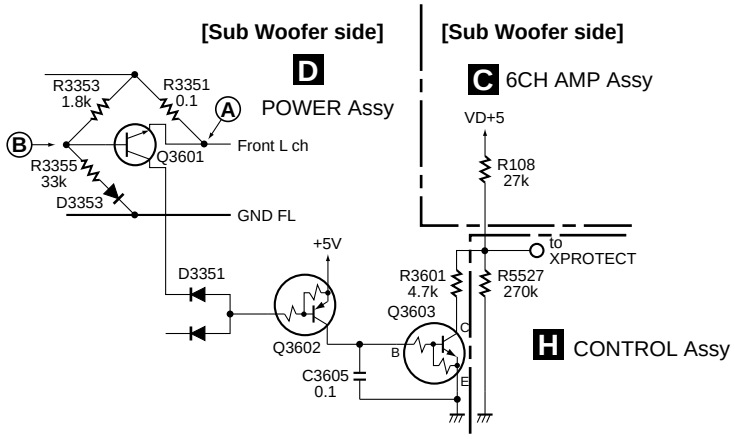
The possible failures for each error message are as follows:
PRTCT WNG:
- The Speaker terminal became overloaded because of short-circuit. (See ①.)

PRTCT ERR:
- The main power supply became LO level because of short-circuit or disconnection of connectors. (See ②.)
- Disconnection of the FAN connector or interruption of rotation of the fan (See ③.)
- DC was generated at the output because of a failure in the AMP system, etc. (See ④.)
- Abnormal temperature was detected by the thermistor. (See ⑤.)

DVD PRTECT:
- An error was generated in the main power supply inside the DVDM. (See ⑥.)

## ■ Protection circuit that activates against a PRTCT WNG error

### ① When the Speaker terminal becomes overloaded




In Normal mode, the speaker (6 ohms) is connected between the FL and GND FL points. Because the voltage at Point Ⓐ is higher than that at Point Ⓑ, Q3601 does not operate.

If the resistance between the FL and GND FL points becomes 1.83 ohms or less, Q3601 begins to operate, Q3602 is turned on, Q3603 (E, C, and B)is turned on, and the level of XPROTECT becomes MID.

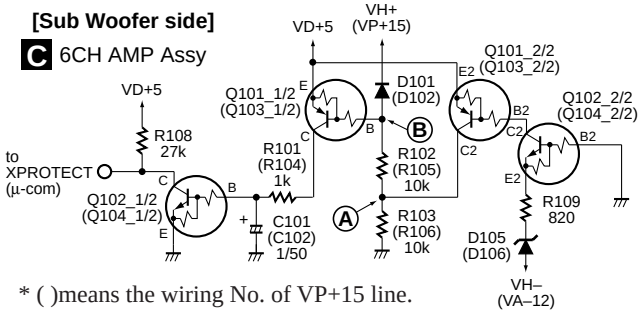
→ The microcomputer detects the XPROTECT level and shuts the power to the unit off.

# ■ Protection circuit that activates against a PRTCT ERR error

## ② When the main power supply becomes LO level because of short-circuit or disconnection of connectors

### ② -1 Short-circuit-detection circuit for the amplifier power circuit (VH+[VP+15], VD+5, -12 V [VA-12])

Circuit for shutting the power off when VP+15, VD+5, or VA-12 is short-circuited to ground (GND)




* ( )means the wiring No. of VP+15 line.

- In Normal mode, as Q101 (Q103) (E2, B2, C2) and Q102 (Q104) (E2, B2, C2) are on, the voltage at Point Ⓐ is about 5 V. The voltage at Point Ⓑ is therefore about the same. As Q101 (Q103) (E, C, B) is off, Q102 (Q104) (E, C, B) is also off.

#### (1) When VH+(VP+15) is short-circuited

As the voltage at Point Ⓑ becomes almost ground potential, and Q101 (Q103) (E, C, B) then Q102 (Q104) (E, C, B) are turned on, the level of XPROTECT becomes low.

→ The microcomputer detects the XPROTECT level and shuts the power to the unit off.

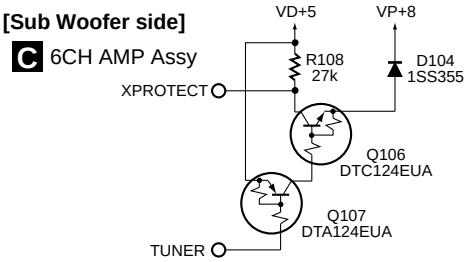
#### (2) When VH-(VA-12) is short-circuited

As the electric potential of VE at Q102 (Q104) (E2, C2, B2) becomes the same as that at VB, Q102 (Q104) (E2, C2, B2) is turned off. Following this, Q101 (Q103) (E2, B2, C2) is turned off, which changes the voltage at Points Ⓐ and Ⓑ to a value other than 5 V. Therefore, Q101 (Q103) (E, C, B) then Q102 (Q104) (E, C, B) are turned on, the level of XPROTECT becomes low.

#### (3) When VD+5 is short-circuited

The level of the XPROTECT line becomes low. The microcomputer detects the XPROTECT level and shuts the power to the unit off.

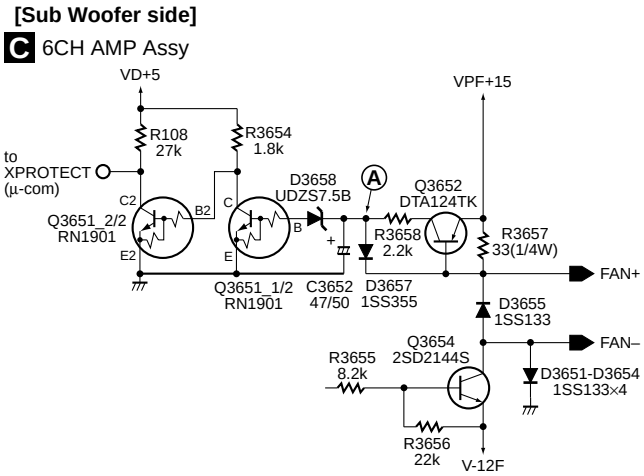
### ② -2 Short-circuit-detection circuit for the DVD power supply (VP+8)




As the TUNER line is fixed to GND level, Q107 is always on. If the level at VP+8 falls to GND level because of short-circuit, etc., Q106 is turned on, and the level of the XPROTECT line becomes low.

← The microcomputer detects the XPROTECT level and shuts the power to the unit off.

## ③ When the FAN connector is disconnected or when rotation of the fan is interrupted

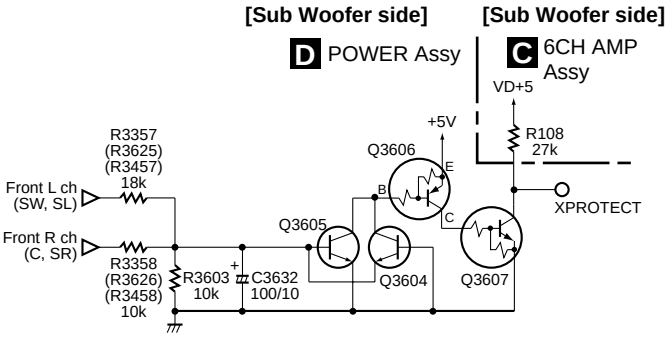



If no fan is connected between FAN+ and FAN-, or when the fan cannot rotate because of a foreign object caught in the blades, the BASE of Q3652 becomes OPEN, and Q3652 and Q3651-1/2 (E, C, B) are turned off. Then Q3651-2/2 (E2, B2, C2) is turned on, and the level of XPROTECT becomes low.

→ The microcomputer detects the XPROTECT level and shuts the power to the unit off.

When FAN+ and FAN- are short-circuited, the electric potential at Point Ⓐ becomes higher than GND level by the addition of the values at D3656 and D3657. As this value is lower than that at D3658, Q3651 (E, C, B) is turned off, Q3651 (E2, B2, C2) is turned on, and the level of XPROTECT becomes low.

### ④ When DC is generated at the output because of a failure in the AMP system, etc.




• In Normal mode, both Q3605 and Q3604 are off.

(1) When positive (+) DC voltage is generated at the SP terminal

When positive (+) DC voltage is generated at the L or R channel, and VB of Q3605 becomes higher than that at the operation point, Q3606 (E, C, B) is turned on, and the level of XPROTECT becomes low.

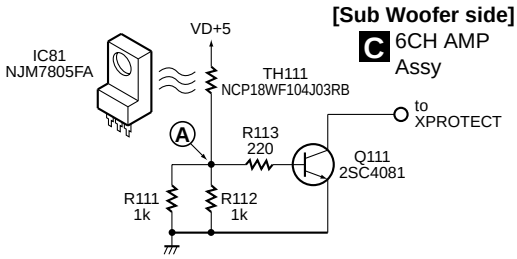
→ The microcomputer detects the XPROTECT level and shuts the power to the unit off.

(2) When negative (-) DC voltage was generated at the SP terminal

Q3604 is turned on, and XPROTECT is activated.

### ⑤ When abnormally high temperature is detected by the thermistor

#### ⑤ -1 IC81 abnormal temperature detection circuit

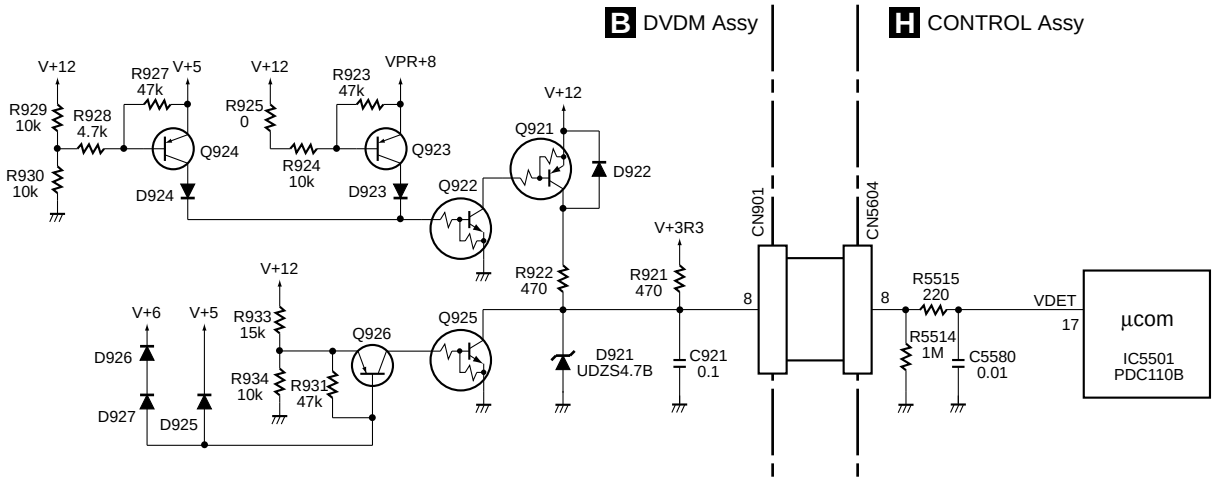



The voltage at Point Ⓐ becomes the divided voltage of TH111 and R111//R112 (combined resistance of parallel-connected resistors R111 and R112.) In Normal mode, the resistance at TH111 is much higher than R111//R112, and Q111 is off. (Note that the resistance at TH111 becomes lower as the temperature increases.) If the solder temperature at IC81 increases abnormally, the temperature at TH111 (thermistor) mounted closest to the land of IC81 increases accordingly, and the resistance at TH111 decreases.

When the temperature at TH111 reaches 90-110_C (varying according to conditions,) the voltage at Point (A) becomes high enough to turn Q111 on, and the level of the XPROTECT line becomes low. The microcomputer detects the XPROTECT level and shuts the power to the unit off.

## ■ Protection circuit that activates against a DVD PRTECT error

⑥ The DVDM monitors the voltage of the main power supply by VDET signals.
In Normal mode, the VDET signal is at the MID level (3.3 V). In the following conditions, the VDET signal level becomes L or H, and the microcomputer is notified of this abnormality.




**Items to be detected by VDET**

(1) When the power voltages inside the DVDM become abnormal, as shown in the table below

| Status | Power | Voltage | Operation | | | | | | | | VDET voltage |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Q923 | Q924 | Q922 | Q921 | D921 | D922 | Q926 | Q925 | |
| In Normal mode | | | off | off | off | off | off | off | off | off | Mid |
| When an abnormality is generat | VDVD+12 | <1V | (on) | (on) | (on) | (off) | off | on | off | off | L |
| | | >15.5V | off | off | off | off | off | off | on | on | L |
| | VPR+8 | <5.2V | – | off | off | off | off | – | on | on | L |
| | | >12.6V | on | – | on | on | on | – | off | off | H |
| | V+6 | <3V | – | – | – | – | – | – | on | on | L |
| | V+5 | <3.6V | – | off | off | off | off | – | on | on | L |
| | | >6.6V | – | on | on | on | on | – | off | off | H |
| | V+3R3 | <2.5V | – | – | – | – | – | – | – | – | L |
| | | >4.25V | – | – | – | – | (on) | – | – | – | H |

(2) When the VDET signal to the microcomputer is interrupted because of defective soldering of the 30-pin connector or incomplete insertion of FFC
→ The VDET level is lowered by the pull-down resistor (1 Mohms) on the side of the microcomputer.

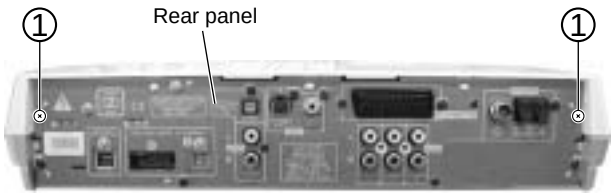
## 7.1.13 DISASSEMBLY

**Note:** For performing the diagnosis shown below, the following jig cable for service are required:
- GGD1222

**This unit is a system component, so it does not operate independently.**
**Refer to section "7.1.11 SINGLE OPERATION METHOD" to work it independently.**

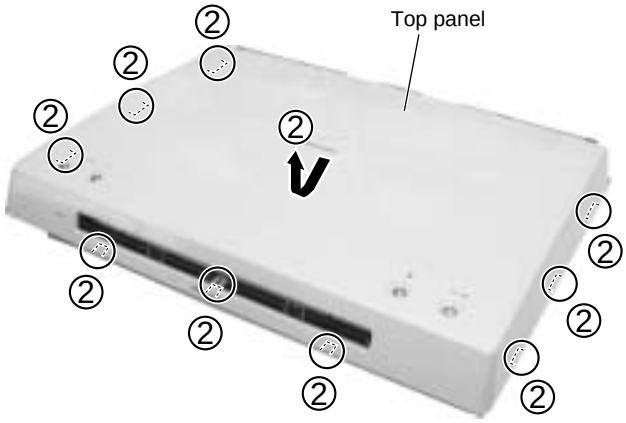
### 1 Top panel, Top plate

① Remove the two screws.

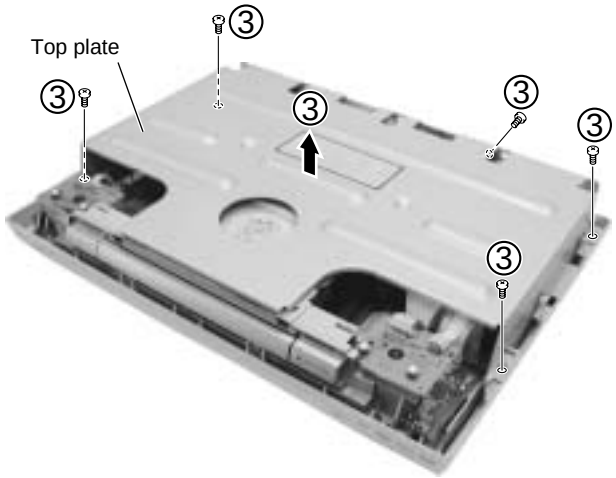



Note: This photograph shows other models.
However, the work method is the same.

② Remove the top panel by removing the nine hooks.



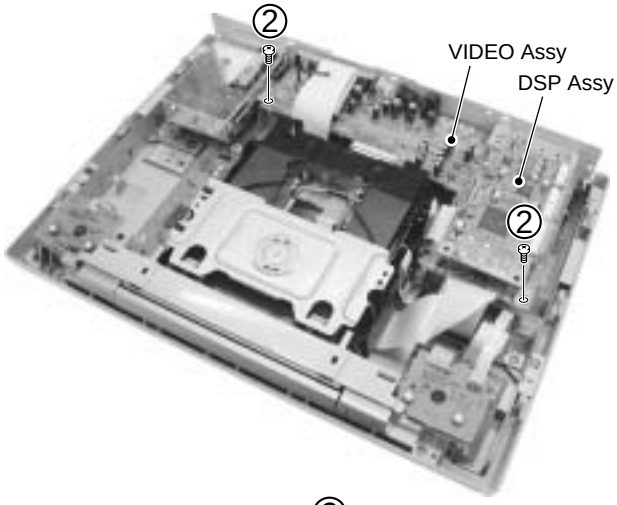

③ Remove the top plate by removing the five screws.

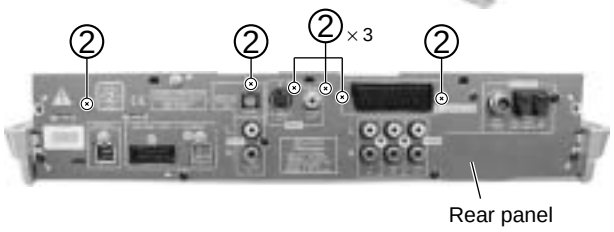



### 2 VIDEO Assy

① Remove the top panel and top plate. (See Step 1.)

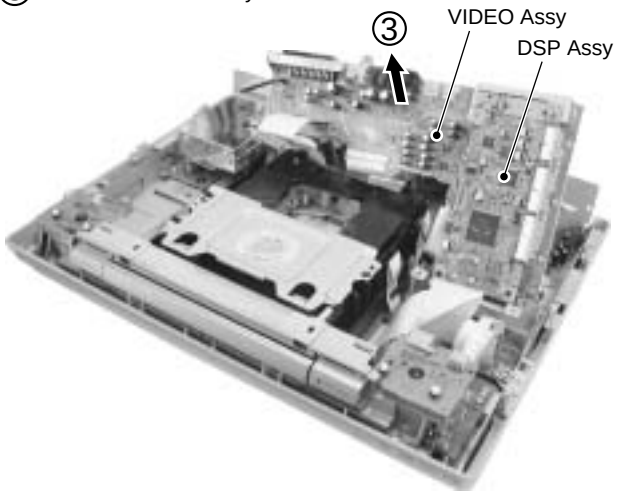
② Remove the eight screws.




Note: This photograph shows other models.
However, the work method is the same.

③ Stand the VIDEO Assy.

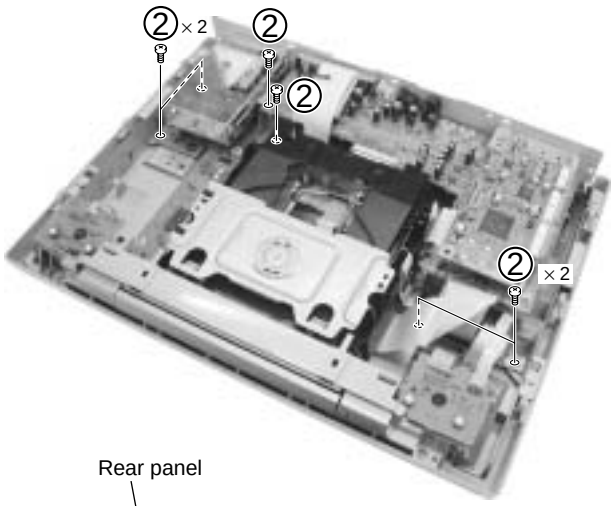


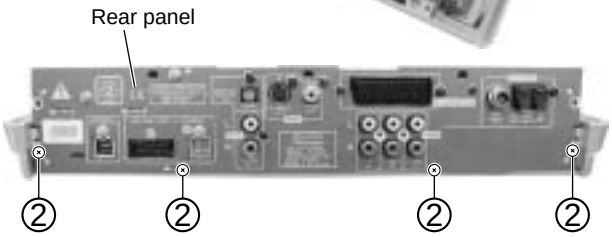

**Diagnosis**

## 3 CONTROL Assy

① Remove the top panel and top plate. (See Step 1.)

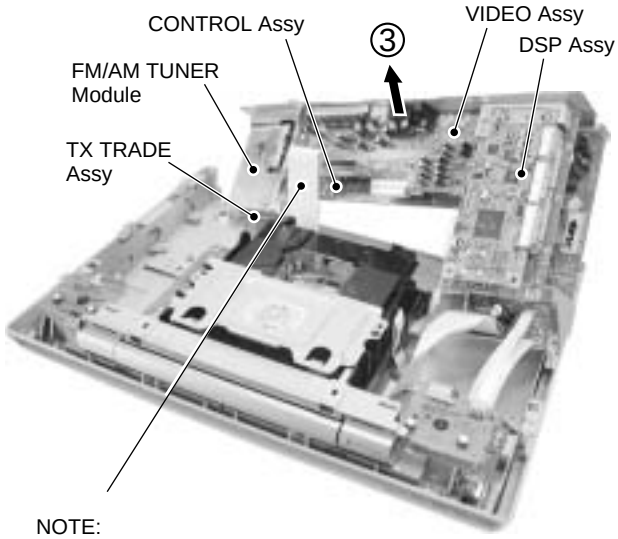
② Remove the ten screws.




Note: This photograph shows other models.
However, the work method is the same.

③ Stand the CONTROL Assy.




NOTE:
When this FFC cable is off from the connector and the power is turned on, the parts below on the DVDM ASSY may be destroyed. Be sure to take care when servicing.

| | |
|---|---|
| IC851 | DSD1791DBR |
| IC861, IC871 | DSD1702EG |

**Diagnosis**

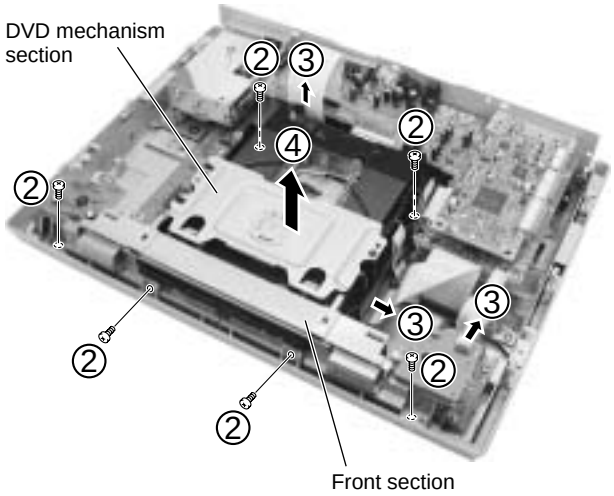
## 4 DVDM Assy

① Remove the top panel and top plate. (See Step 1.)

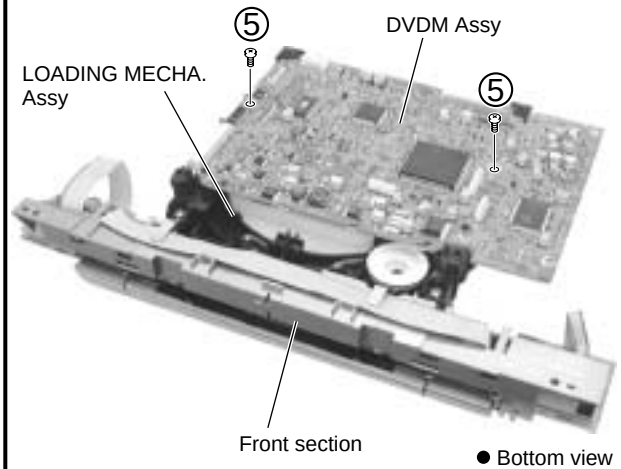
② Remove the six screws.

③ Remove the three flexible cables.

④ Remove the DVD mechanism section with front section.

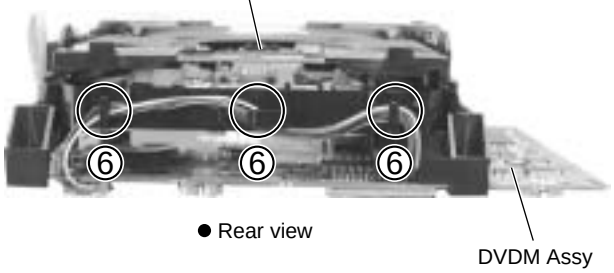



⑤ Remove the two screws.




● Bottom view

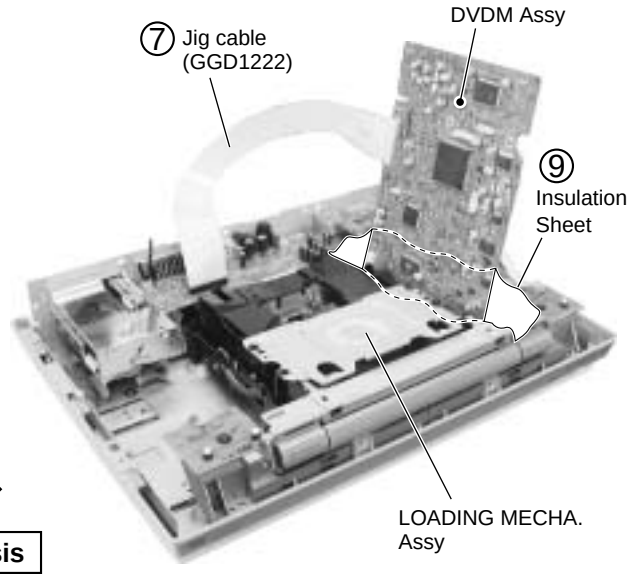
⑥ Release the jumper wire.




⑦ Connect the jig cable.

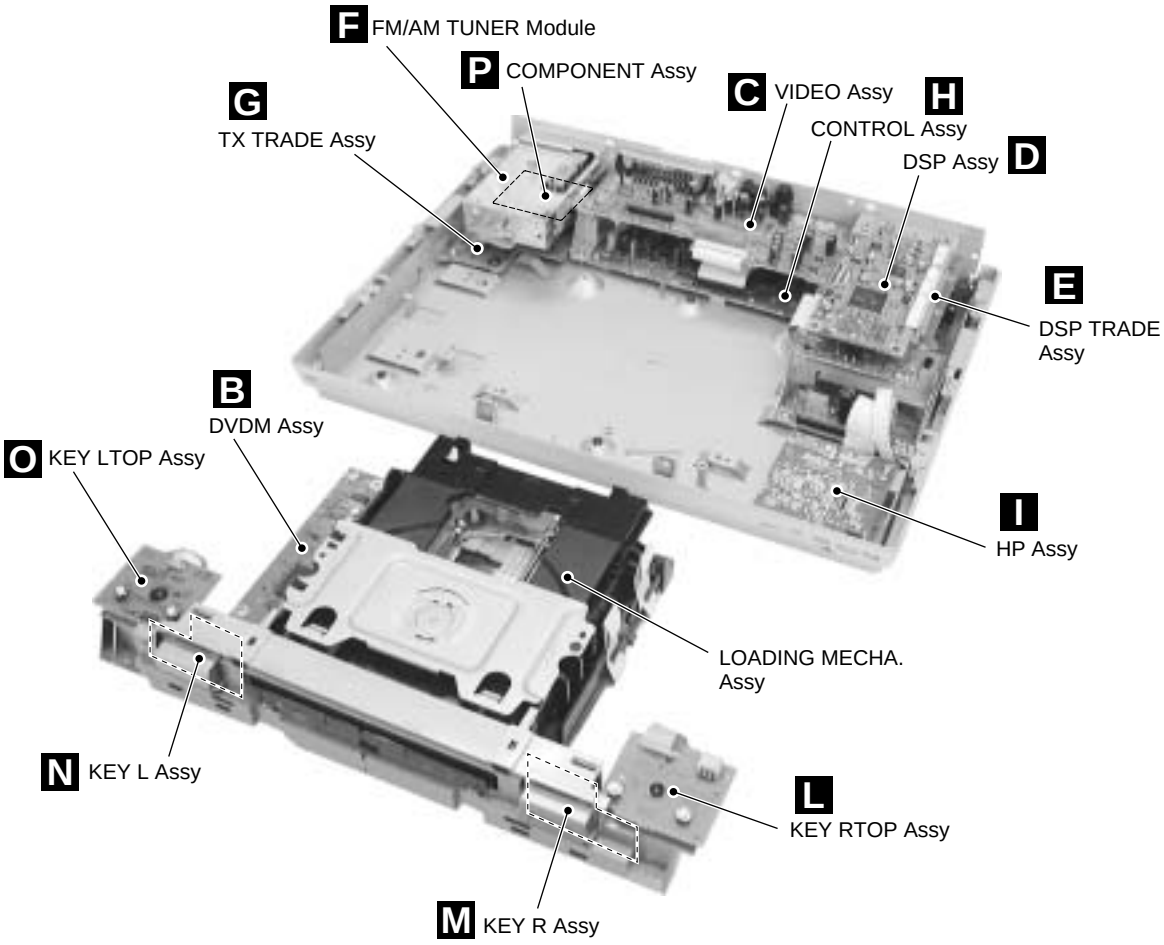
⑧ Arrange the DVDM Assy as shown in the photo below.

⑨ Insert the insulation sheet.




**Diagnosis**

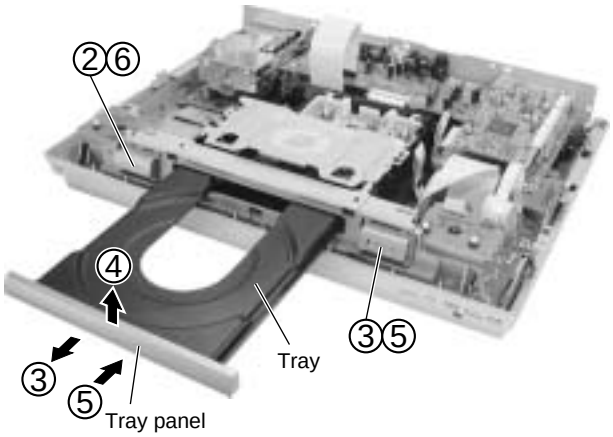
## PCB Location



## 5 Tray panel

Firstly remove the tray panel to remove the mecha. section.
In this section, explain a disassembly of the tray panel.

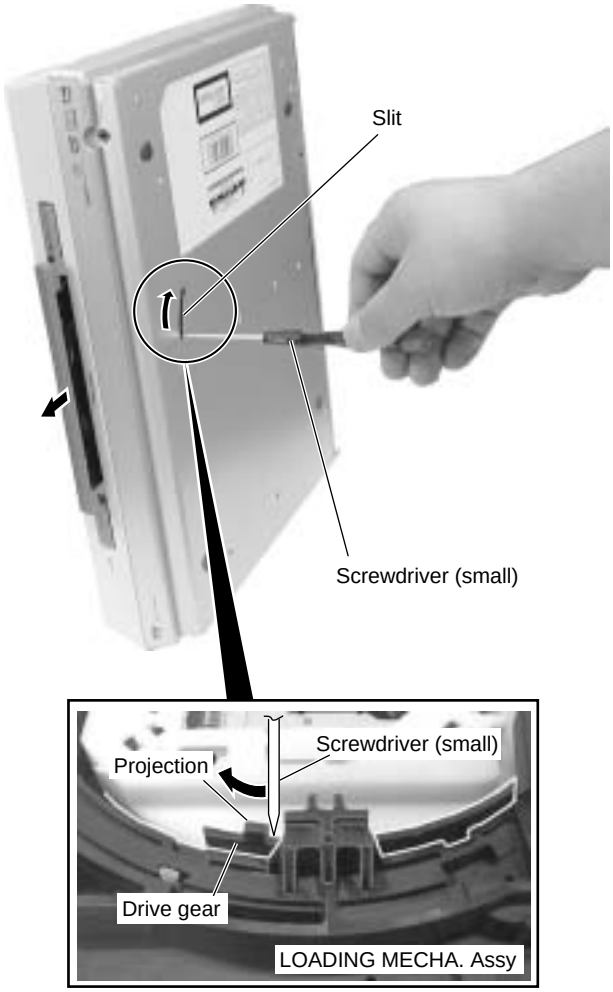
① Remove the top panel and top plate. (See Step 1.)
② Press the ⏻ STANDBY/ON button to turn on the power.
③ Press the ⏏ (OPEN/CLOSE) button to open the tray.
④ Remove the tray panel.
⑤ Press the ⏏ (OPEN/CLOSE) button to close the tray.
⑥ Press the ⏻ STANDBY/ON button to turn off the power.




⑦ Disassembly of after step 7, refer to "Step 4 DVDM Assy" .

### ● How to open the tray when the power cannot be on

Insert a screwdriver (small) into the slit located at the bottom of the unit, and slide the projection of the drive gear in the LOADING MECHA. Assy in the direction of the arrow, as indicated in the photo. If the tray pops out a little, fully pull it out by a hand.



## Removing the TRAVERSE MECHA. Assy-S and Pickup Assy-S

### 1 LOADING MECHA. Assy

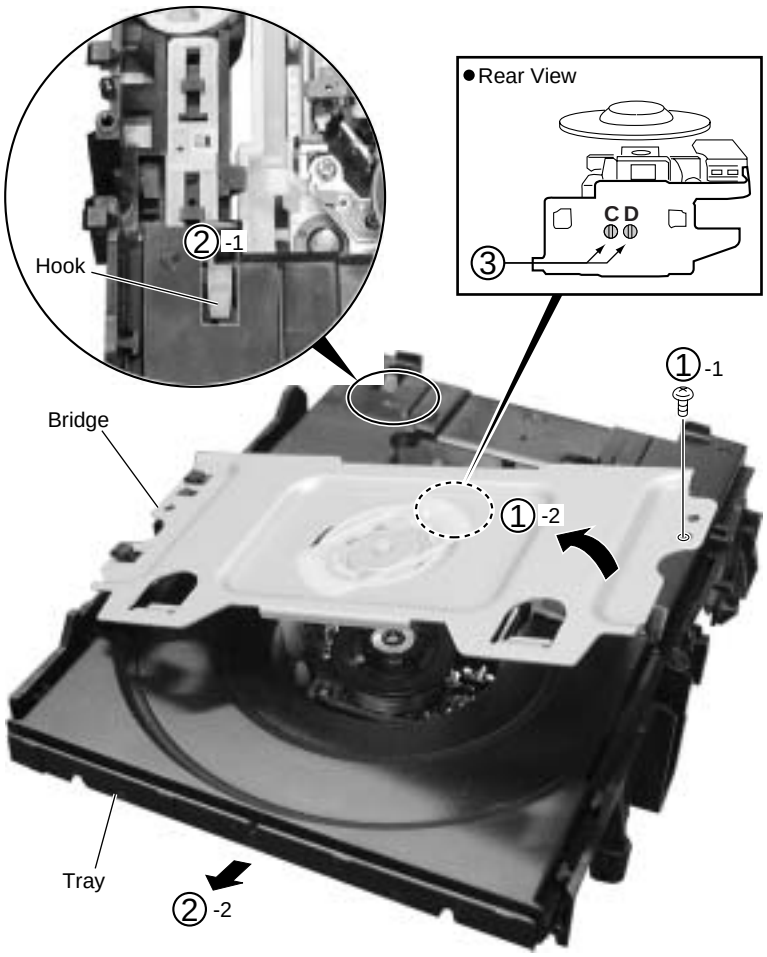
① Remove the bridge by removing the one screw.

② Pull out the tray, then remove it by pressing the hook.

③ Short-circuit two points of C and D by soldering.

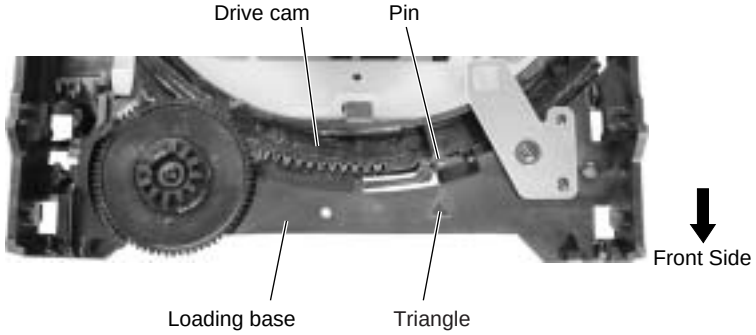
**Note:** After replacement, connect the flexible cable, then remove the soldered joint (open).

④ Remove the four connectors from the LOADING MECHA. Assy.



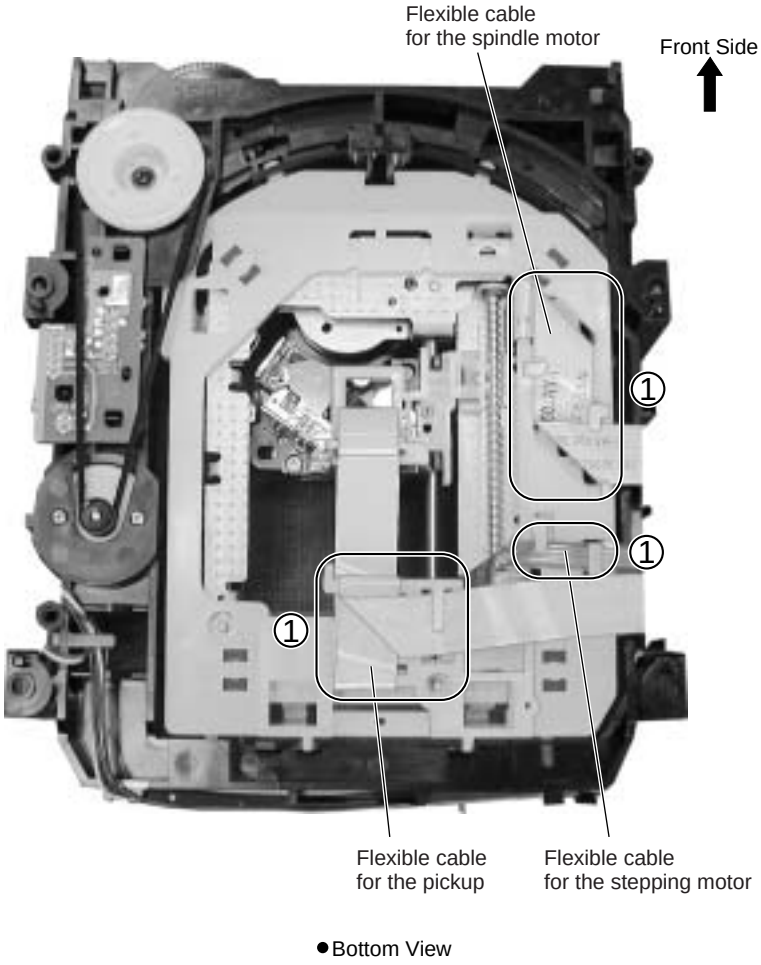

### Note when reinserting the Tray

When reinserting the Tray, first align the triangle printed on the Loading base and the pin of the Drive cam, then insert the Tray.



## 2 TRAVERSE MECHA. Assy-S

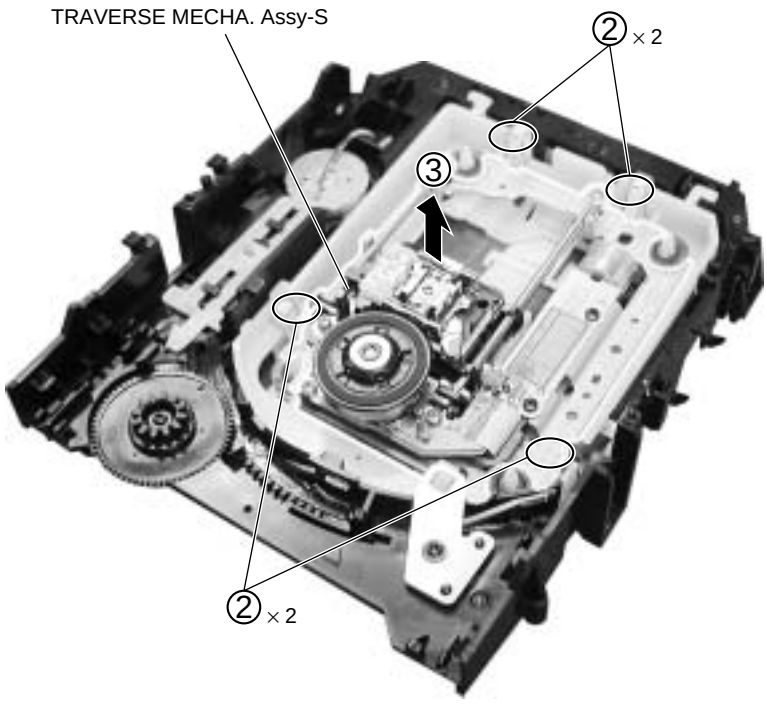
① Dislodge the flexible cables from their packaged placement.




● Bottom View

② Remove the four hooks.

③ Remove the TRAVERSE MECHA. Assy-S.

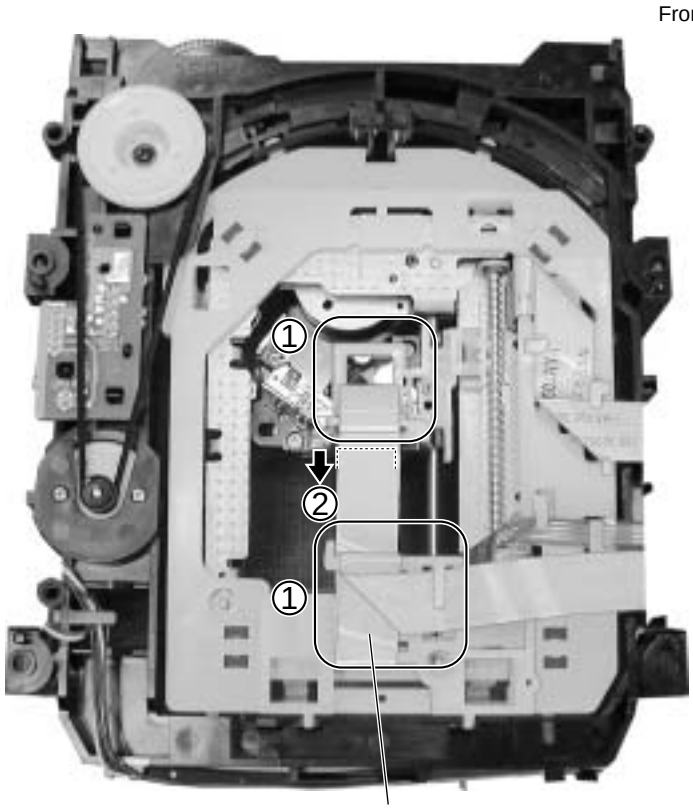


## 3 Pickup Assy-S

**Note:** The Pickup Assy-S can be removed without removing the TRAVERSE MECHA. Assy-S. (shown as Step 2.)

① Dislodge the flexible cable for the pickup from its packaged placement.

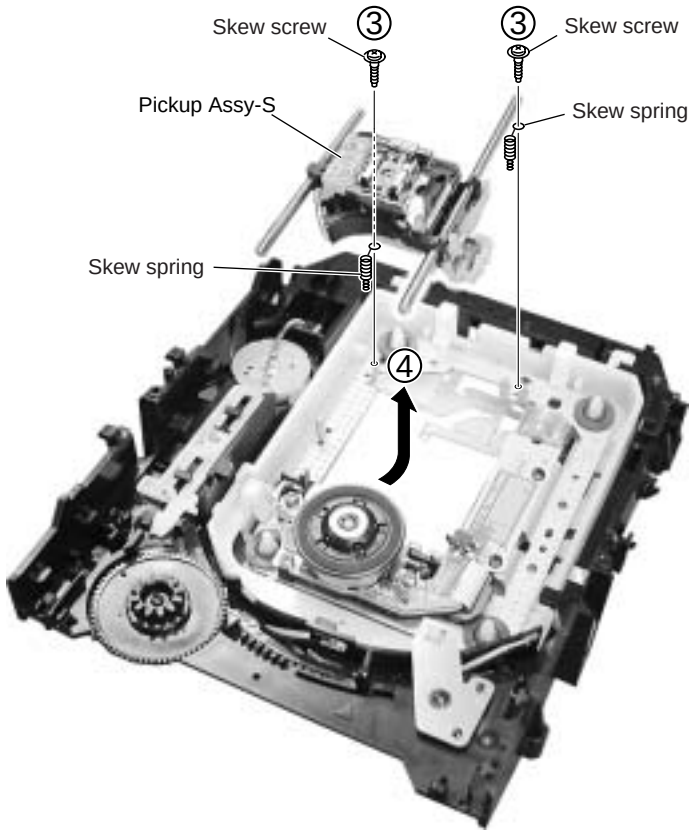
② Remove the flexible cable for the pickup.




● Bottom View

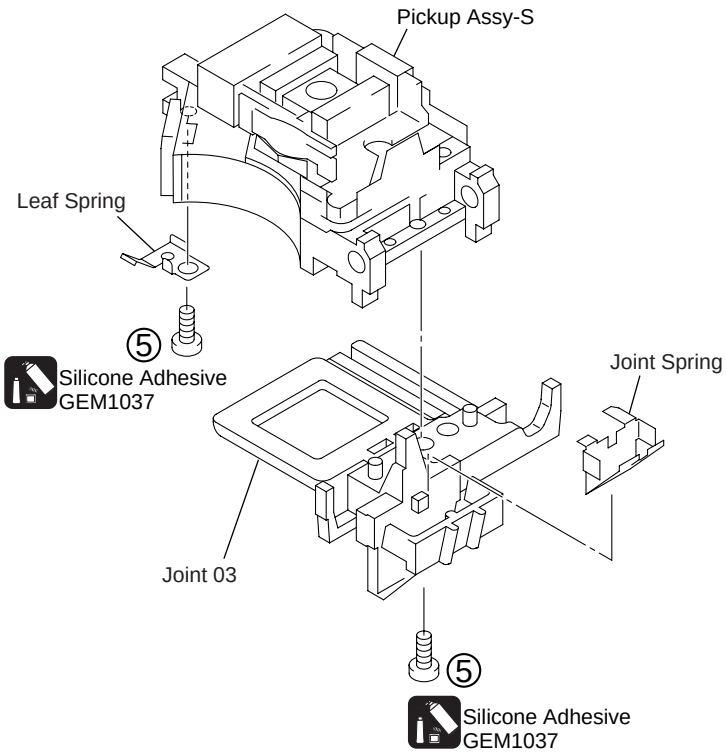
③ Remove the two skew screws and two skew springs.

④ Remove the Pickup Assy-S.



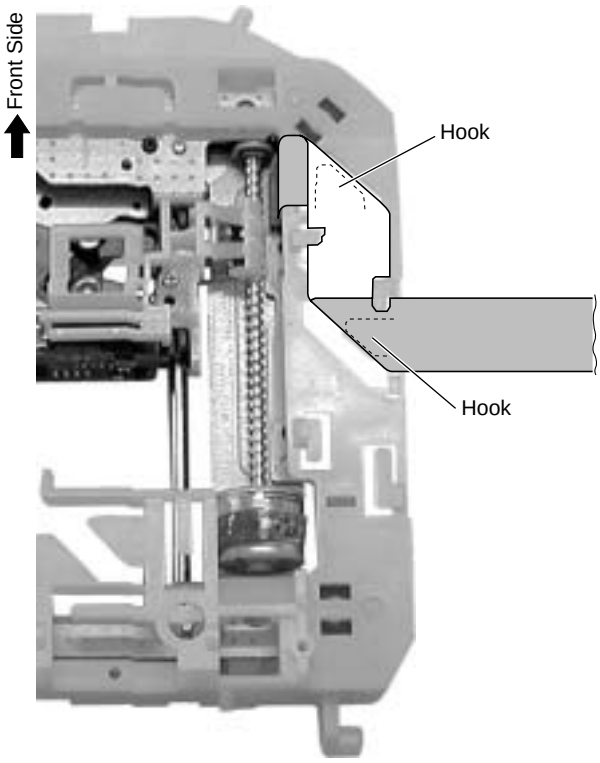
⑤ Remove the two screws.

**Note:** The screws are secured with epoxy. Make sure to apply epoxy after reattaching the screws.




**Arrangement of the flexible cable for the spindle motor**

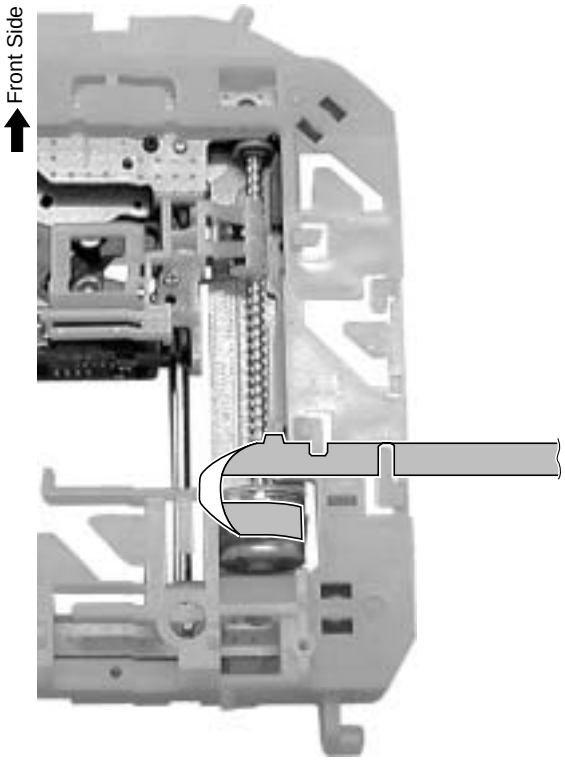
: Conductive surface




● Bottom View

**Arrangement of the flexible cable for the stepping motor**

: Conductive surface




● Bottom View

## Arrangement of the flexible cable for the pickup

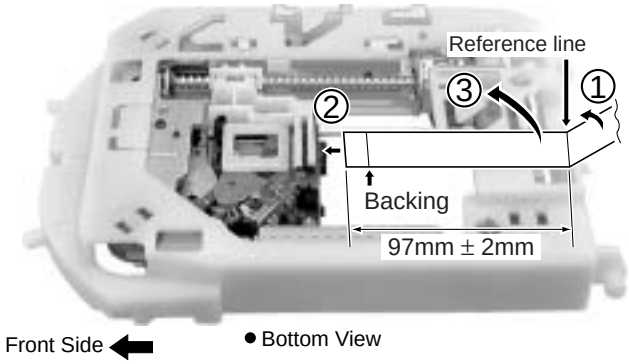
: Conductive surface

**Note:**
Be sure to move the Pickup Assy-S to the innermost perimeter.

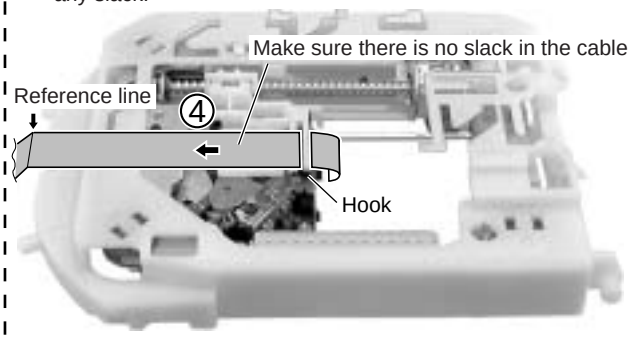
① Fold the flexible cable inward at the position of the reference line.

② Attach the flexible cable of the pickup to the connector.

③ Fold the flexible cable of the pickup with the backing inward.

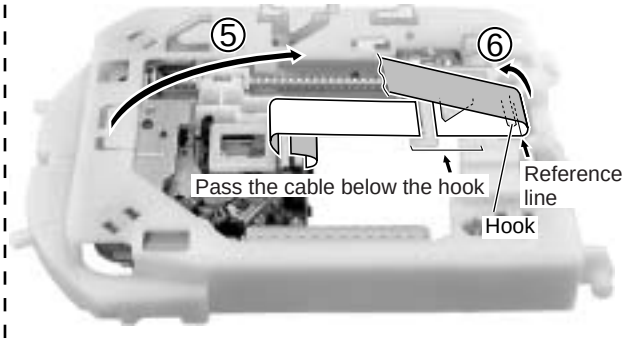



④ Pass the flexible cable through the hook not allowing any slack.

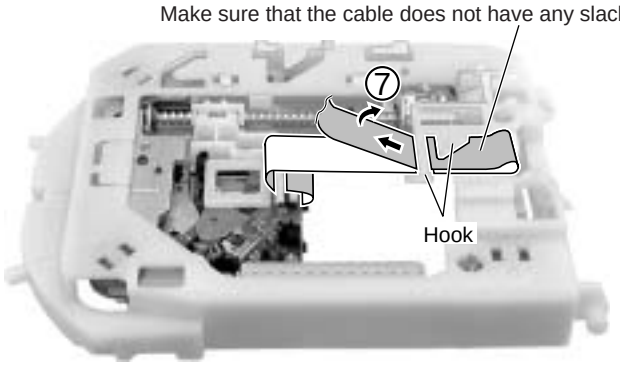



⑤ Fold the flexible cable as indicated in the photo.

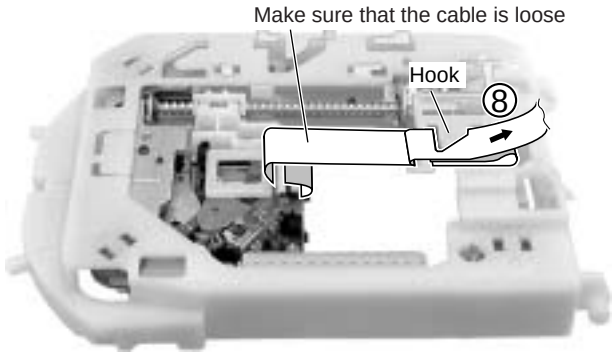
⑥ Hook the part folded in Step ① to the hook.



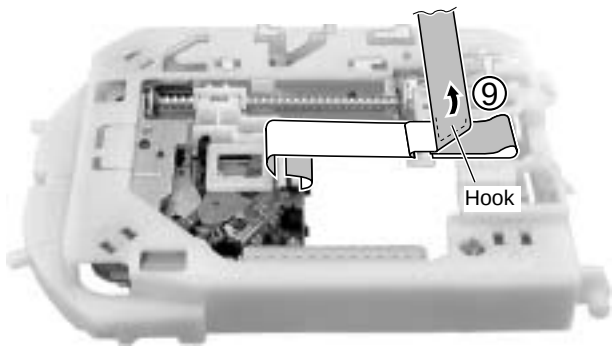

⑦ Pass the flexible cable below the hook, and fold it back.




⑧ Fold the flexible cable back at the hook.




⑨ Fold the flexible cable along the hook.



## 7.2 IC

• The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

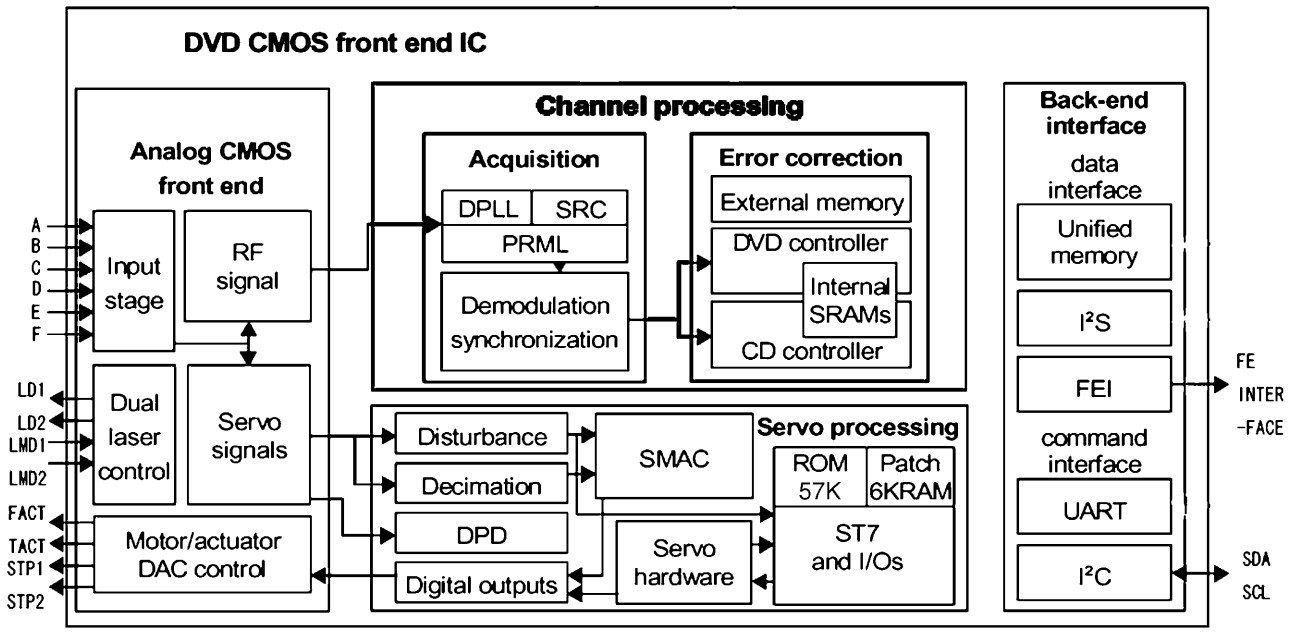
**• List of IC**

STM6316ATXXZ, STM5588CVB, M63108FP, SAA7893HL/C2, PDC110B

### ■ STM6316ATXXZ (DVDM ASSY : IC301)

**• FRONT END IC**

**● Block Diagram**



## ● Pin Function

| No. | PIN name | description | detail |
|---|---|---|---|
| 1 | IREF | 12.7kF | Analog block reference part |
| 2 | GNDAI | GNDA | analog gnd |
| 3 | RFIN | capacitor | RF signal C association input to a demodulation block |
| 4 | RFOUT | capacitor | B1+B2+B3+B4 mixture listing from an analog block |
| 5 | VCCA18 | 1V8A | analog 1V8 |
| 6 | A | B1 | PU - B1 input |
| 7 | GNDMN | GNDA | analog gnd |
| 8 | B | B2 | PU - B2 input |
| 9 | VCC33MN | 3V3A | analog 3V3 |
| 10 | REFD | to pick up | 2V1 output for PU |
| 11 | VCC18MN | 1V8A | analog 1V8 |
| 12 | D | B4 | PU - B4 input |
| 13 | VCCA18IS | 1V8A | analog 1V8 |
| 14 | C | B3 | PU - B3 input |
| 15 | VCCA33IS | 3V3A | analog 3V3 |
| 16 | GNDAIS | GNDA | analog gnd |
| 17 | VCC33SD | 3V3A | analog 3V3 |
| 18 | VCC18SD | 1V8A | analog 1V8 |
| 19 | GNDSD | GNDA | analog gnd |
| 20 | F | C | PU-3 beam C input |
| 21 | E | A | PU-3 beam A input |
| 22 | VSHIELDIS | GNDA | analog gnd |
| 23 | VCC18ADC | 1V8A | analog 1V8 |
| 24 | GNDADC | GNDA | analog gnd |
| 25 | VSHIELDADC | GNDA | analog gnd |
| 26 | VCC33DAC | 3V3A | analog 3V3 |
| 27 | GNDDAC | GNDA | analog gnd |
| 28 | SPINDLE | 560ohm(st2) | DAC current listing for stepper drive |
| 29 | SLEDGE | 560ohm(st1) | DAC current listing for stepper drive |
| 30 | REFEXT | 20K1% | Reference for DAC |
| 31 | REFGND | refext | analog gnd |
| 32 | REFDAC | 560ohm1% | DAC reference |
| 33 | FACT | 560ohm1% | DAC current listing for focus |
| 34 | TACT | 560ohm1% | DAC current listing for tracking |
| 35 | VCC18DAC | 1V8A | analog 1V8 |
| 36 | PC0 | FG | FG pulse input |
| 37 | PC1 | PS | Driver control signal |
| 38 | PC2 | tray SW1(open) | SW input for tray OPEN position |
| 39 | PC3 | SB | Driver control signal |
| 40 | PC4 | SLD position | Inside SW input |

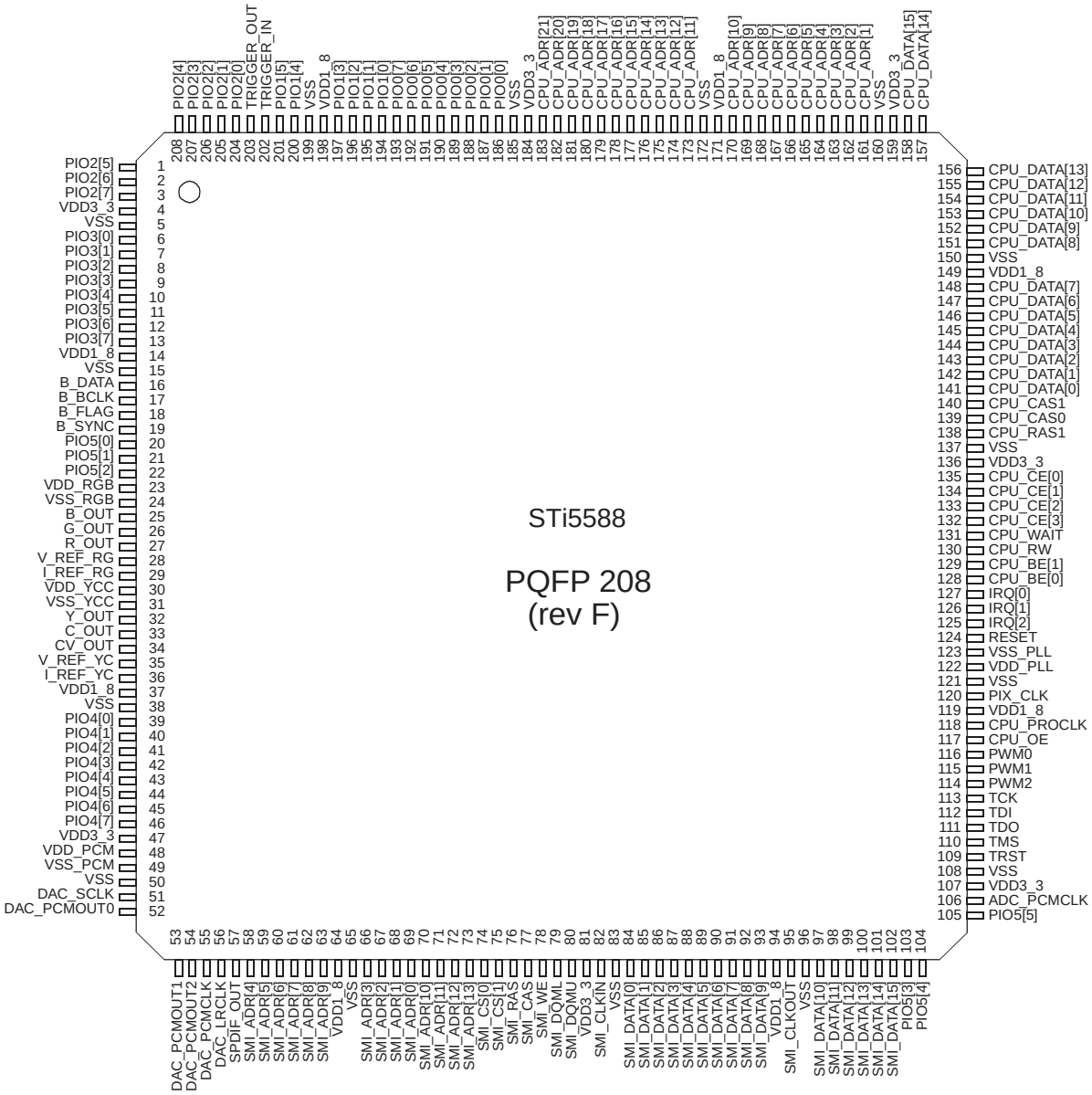
| No. | PIN name | description | detail |
|---|---|---|---|
| 41 | VSS | GNDD | digital gnd |
| 42 | VDD33 | 3V3D | digital 3V3 |
| 43 | PC5 | 780/X650 | 780nm/650nmLD change control signal |
| 44 | PC6 | spinde PDM | Control PDM listing for spindle drive |
| 45 | PC7 | opicgain | OEIC gain control signal |
| 46 | PD7 | 03PU/X02PU | Pull-up settlement |
| 47 | VSS | GNDD | digital gnd |
| 48 | VDD18 | 1V8D | digital 1V8 |
| 49 | PD6 | (debug) | test |
| 50 | PD5 | (debug) | test |
| 51 | PD4 | (DSPclk) | test |
| 52 | PD3 | (DSPdata) | test |
| 53 | PD2 | (DSPstrb1) | test |
| 54 | PD1 | error monitor | Terminal for TRKG error monitor (30KHzLPF add need) |
| 55 | PD0 | tray PDM drive | Control PDM signal for tray drive |
| 56 | VSS | GNDD | digital gnd |
| 57 | VDD33 | 3V3D | digital 3V3 |
| 58 | OUT_ERR | RS_ERROR | BE DATA I/F |
| 59 | OUT_EVALID | RS_ERR_EN | BE DATA I/F |
| 60 | VSS | GNDD | digital gnd |
| 61 | OUT_CLK | RS_BCLK | BE DATA I/F |
| 62 | VDD18 | 1V8D | digital 1V8 |
| 63 | OUT_DVALID | RS_DVALID | BE DATA I/F |
| 64 | OUT_DATA | RS_DATA | BE DATA I/F |
| 65 | OUT_SYNC | RS_ECCBST | BE DATA I/F |
| 66 | PE5 | SCL(DMA) | FE routine download input |
| 67 | PE4 | SDA(DMA) | FE routine download input |
| 68 | PE3 | SCL | BE command I/F |
| 69 | PE2 | SDA | BE command I/F |
| 70 | PE1 | tray SW2(close) | SW input for tray CLOSE position |
| 71 | PE0 | DXXINT | FE status propagation signal |
| 72 | VSS | GNDD | digital gnd |
| 73 | VDD33 | 3V3D | digital 3V3 |
| 74 | PF1 | 10K-pullup | Built-in facility setting terminal |
| 75 | PF0 | 10K-pulldown | Built-in facility setting terminal |
| 76 | VSS | GNDD | digital gnd |
| 77 | VDD18 | 1V8D | digital 1V8 |
| 78 | PG1 | to EMULATOR | Built-in facility setting terminal |
| 79 | PG0 | to EMULATOR | Built-in facility setting terminal |
| 80 | TEST | 10K-pulldown | test |

| No. | PIN name | description | detail |
|---|---|---|---|
| 81 | RESET_N | RESET | RESET input |
| 82 | VSSADC | GNDA | analog gnd |
| 83 | VDD18ADC | 1V8A | analog 1V8 |
| 84 | GNDPLL | GNDA | analog gnd |
| 85 | PLLOFF | GNDA | analog gnd |
| 86 | FREOUT | 20MXtal | SYSTEMCLK oscillating circuit |
| 87 | FREIN | 20MXtal | SYSTEMCLK oscillating circuit |
| 88 | VCC18PLL | 1V8A | analog 1V8 |
| 89 | LD1 | 650nmLD | 650nmLD driving signal |
| 90 | LD2 | 780nmLD | 780nmLD driving signal |
| 91 | VCCA33 | 3V3A | digital 3V3 |
| 92 | TWSEL | CD_VR/GND | Monitor diodes VR junction terminal for CD |
| 93 | LMD1 | LMD/LMD1 | Monitor voltage junction terminal |
| 94 | LMD2 | DVD_VR/LMD2 | Monitor diodes VR junction terminal for DVD |
| 95 | GNDL | GNDA | analog gnd |
| 96 | TST_PM | nc | tset |
| 97 | TST_SLICE | nc | test |
| 98 | TST_ADC | nc | test |
| 99 | RFSACD | SACD_IC | RF signal output |
| 100 | VBGFILT | capacitor | Condenser junction terminal for inside reference stability |

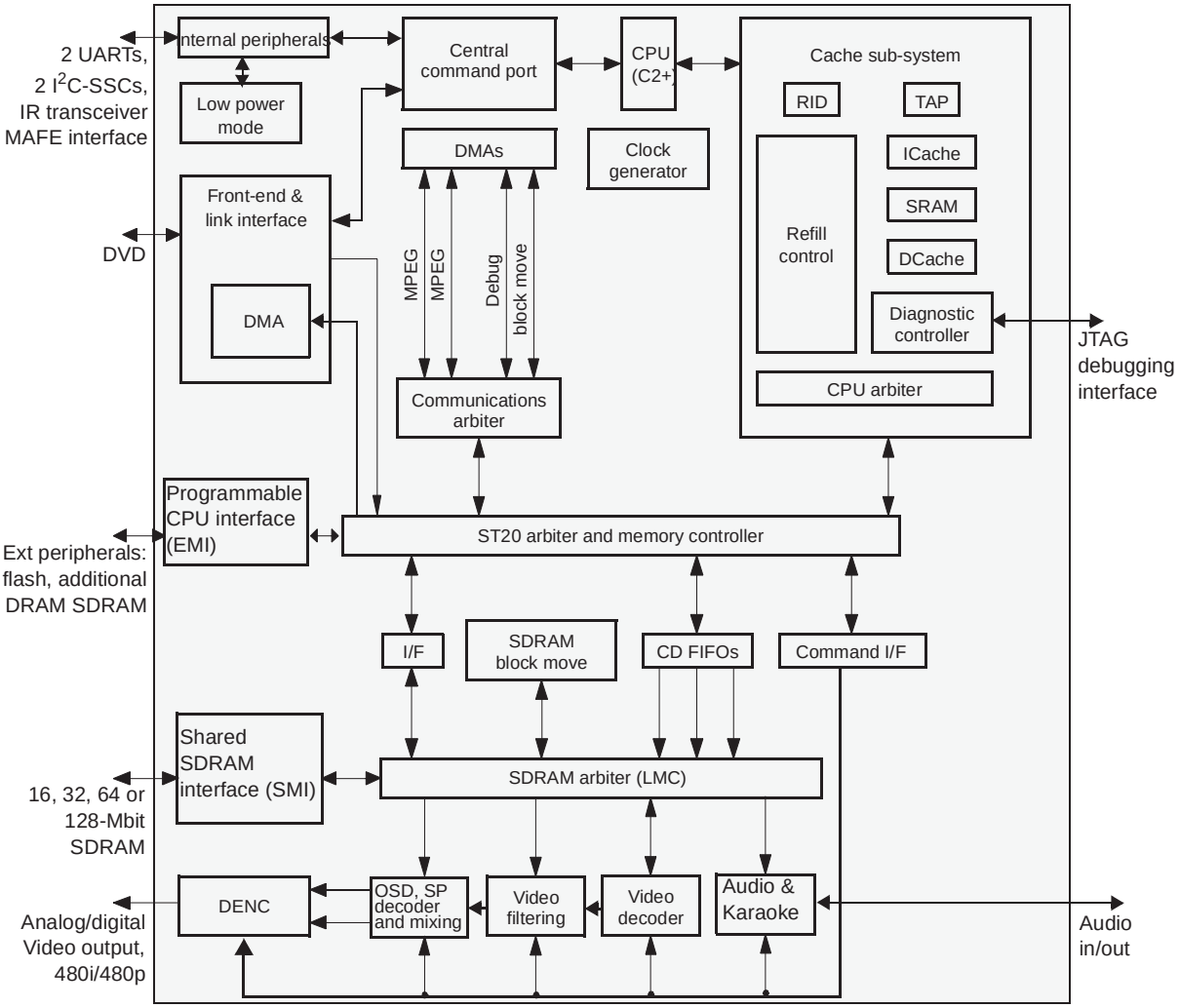
## ■ STI5588CVB (DVDM ASSY : IC601)

### • BACK END IC

### ● Pin Configuration



## ● Block Diagram



## ● Pin Function

| No. | Pin Name | Dir. | Pin Function |
|---|---|---|---|
| 1 | FP_SO | OUT | Front Panel / DAC interface.<br>Serial transfer data output. |
| 2 | A_DATA3 | OUT | Data output to SACD decoder |
| 3 | VCLK | OUT | reserved |
| 4 | VDD_3V3 | - | 3.3 V Power supply |
| 5 | VSS | - | Ground |
| 6 | B_DATA | OUT | SACD data output to SACD decoder |
| 7 | B_BCLK | OUT | SACD bit clock output to SACD decoder |
| 8 | B_FLAG | OUT | SACD flag output to SACD decoder |
| 9 | TRYPOS | OUT | It is not connected except 5 Disc Changer. |
| | | IN | Only 5 Disc Changer.<br>Tray rotation pulse input.<br>CAPTURE_IN0 can be used. |
| 10 | SQUEEZE | OUT | Output signal for S-Video output S1/S2 control.<br>'H' : squeeze output mode. |
| 11 | RTS | OUT | UART(RS-232C) Request To Send signal output. |
| 12 | LETTER | OUT | Output signal for S-Video output S1/S2 control & EURO(SCART) connector (FUNCTION SWITCHING) signal.<br>'H' : letter-box output mode. |
| 13 | CTS | IN | UART(RS-232C) Clear To Send signal input. |
| 14 | VDD_1V8 | - | 1.8 V Power supply |
| 15 | VSS | - | Ground |
| 16 | FE_DATA | IN | Front-End L6316 stream interface.<br>Serial data input. |
| 17 | FE_BCLK | IN | Front-End L6316 stream interface.<br>Serial clock input. |
| 18 | FE_DVALID | IN | Front-End L6316 stream interface.<br>Data valid flag input. |
| 19 | FE_SYNC | IN | Front-End L6316 stream interface.<br>Serial synchronize flag input. |
| 20 | FE_EVALID | IN | Front-End L6316 stream interface.<br>Error valid flag for RS_split. |
| 21 | FE_ECCBST | IN | Front-End L6316 stream interface.<br>ECC block start flag for RS_split. |
| 22 | I/XP | OUT | Output signal for a change of interlace/Progressive output for video driver.<br>'L' : progressive 'H' : interlace |
| 23 | VDD_RGB | - | RGB circuit 3.3 V Power supply |
| 24 | VSS_RGB | - | RGB circuit Ground |
| 25 | B_OUT | OUT | B / Cb |
| 26 | G_OUT | OUT | G / Y |
| 27 | R_OUT | OUT | R / Cr |
| 28 | VREF_RGB | IN | RGB DAC reference |
| 29 | IREF_RGB | IN | RGB DAC current reference |
| 30 | VDD_YCC | - | YC circuit 3.3 V Power supply |
| 31 | VSS_YCC | - | YC circuit Ground |
| 32 | Y_OUT | OUT | Y |
| 33 | C_OUT | OUT | C |
| 34 | CV_OUT | OUT | CV |
| 35 | VREF_YCC | IN | YCC DAC reference |
| 36 | IREF_YCC | IN | YCC DAC current reference |
| 37 | VDD_1V8 | - | 1.8 V Power supply |
| 38 | VSS | - | Ground |

| No. | Pin Name | Dir. | Pin Function |
|---|---|---|---|
| 39 | FE_XDRV_MUTE | OUT | It is not connected except 5 Disc Changer. |
| | | | Only 5 Disc Changer.<br>Output signal for motor driver muting.<br>'L' : muting |
| 40 | FE_OPEN | OUT | It is not connected except 5 Disc Changer. |
| | | IN | Only 5 Disc Changer.<br>Input signal for tray position.<br>'H' : complete OPEN position. |
| 41 | FE_CLOSE | OUT | It is not connected except 5 Disc Changer. |
| | | IN | Only 5 Disc Changer.<br>Input signal for tray position.<br>'H' : complete CLOSE position. |
| 42 | CLAMP | OUT | It is not connected except 5 Disc Changer. |
| | | IN | Only 5 Disc Changer.<br>Input signal for showing disc clamp position.<br>'H' : complete disc clamp position. |
| 43 | XUNCLAMP | OUT | It is not connected except 5 Disc Changer. |
| | | IN | Only 5 Disc Changer.<br>Input signal for showing disc un-clamp position.<br>'H' : complete disc clamp position. |
| 44 | DISC_SNS | OUT | It is not connected except 5 Disc Changer. |
| | | IN | Only 5 Disc Changer.<br>Input signal for disc existing.<br>'L' : existing |
| 45 | XDRVMUTE2 | OUT | reserved |
| 46 | TP-x | OUT | reserved |
| 47 | VDD_3V3 | - | 3.3 V Power supply |
| 48 | VDD_PCM | - | 1.8 V Power supply |
| 49 | VSS_PCM | - | Ground |
| 50 | VSS | - | Ground |
| 51 | A_BCK | OUT | Audio DAC clock |
| 52 | A_DATA0 | OUT | Audio DAC Front L,R data |
| 53 | A_DATA1 | OUT | Audio DAC Center, LFE data |
| 54 | A_DATA2 | OUT | Audio DAC Surround L, R data |
| 55 | A_MCLK | OUT | Audio DAC Master clock |
| 56 | A_LRCK | OUT | Audio DAC L/R clock |
| 57 | A_DOUT | OUT | S/PDIF(IEC60958) digital audio output. |
| 58 | SMI_A4 | OUT | SMI SDRAM Address |
| 59 | SMI_A5 | | |
| 60 | SMI_A6 | | |
| 61 | SMI_A7 | | |
| 62 | SMI_A8 | | |
| 63 | SMI_A9 | | |
| 64 | VDD_1V8 | - | 1.8 V Power supply |
| 65 | VSS | - | Ground |
| 66 | SMI_A3 | OUT | SMI SDRAM Address |
| 67 | SMI_A2 | | |
| 68 | SMI_A1 | | |
| 69 | SMI_A0 | | |
| 70 | SMI_A10 | | |
| 71 | SMI_A11 | | |
| 72 | SMI_A12 | | |
| 73 | SMI_A13 | | |

| No. | Pin Name | Dir. | Pin Function |
|---|---|---|---|
| 74 | SMI_CS0 | OUT | SMI SDRAM chip select 'L'. |
| 75 | SMI_CS1 | OUT | reserved |
| 76 | SMI_RAS | OUT | SMI SDRAM RAS 'L' |
| 77 | SMI_CAS | OUT | SMI SDRAM CAS 'L' |
| 78 | SMI_WE | OUT | SMI SDRAM Write Enable 'L' |
| 79 | SMI_DQML | OUT | SMI SDRAM Lower DQM<br>'L': Lower select |
| 80 | SMI_DQMU | OUT | SMI SDRAM Upper DQM<br>'L': Upper select |
| 81 | VDD_3V3 | - | 3.3 V Power supply |
| 82 | SMI_CLKIN | IN | External SDRAM clock input. |
| 83 | VSS | - | Ground |
| 84 | SMI_D0 | I/O | SMI SDRAM Data |
| 85 | SMI_D1 | | |
| 86 | SMI_D2 | | |
| 87 | SMI_D3 | | |
| 88 | SMI_D4 | | |
| 89 | SMI_D5 | | |
| 90 | SMI_D6 | | |
| 91 | SMI_D7 | | |
| 92 | SMI_D8 | | |
| 93 | SMI_D9 | | |
| 94 | VDD_1V8 | - | 1.8 V Power supply |
| 95 | SMI_CLKOUT | OUT | SDRAM clock output. |
| 96 | VSS | - | Ground |
| 97 | SMI_D10 | I/O | SMI SDRAM Data |
| 98 | SMI_D11 | | |
| 99 | SMI_D12 | | |
| 100 | SMI_D13 | | |
| 101 | SMI_D14 | | |
| 102 | SMI_D15 | | |
| 103 | TRACK_CROSS | OUT | reserved |
| 104 | DSD_XPCM | OUT | reserved |
| 105 | DAC_XRST | OUT | Reset signal of audio DAC.<br>'L': Reset |
| 106 | ADC_PCMCLK | OUT | reserved |
| 107 | VDD_3V3 | - | 3.3 V Power supply |
| 108 | VSS | - | Ground |
| 109 | XTRST | IN | Diagnostic Control Unit interface |
| 110 | TMS | IN | Diagnostic Control Unit interface |
| 111 | TDO | OUT | Diagnostic Control Unit interface |
| 112 | TDI | IN | Diagnostic Control Unit interface |
| 113 | TCK | IN | Diagnostic Control Unit interface |
| 114 | ROTDRV | OUT | Only 5 disc changer.<br>PWM output for tray rotation. |
| 115 | BOOT_FROM_ROM | IN | Boot select<br>'L' : Boot from DCU.<br>'H' : Boot form ROM. |
| 116 | LOAD_DRV | OUT | Only 5 disc changer.<br>PWM output for tray Open/Close drive. |
| 117 | CPU_OE | OUT | OE signal for 16M bits FLASH memory for firmware.<br>'L': enable |

| No. | Pin Name | Dir. | Pin Function |
|---|---|---|---|
| 118 | CPU_SDCK | OUT | CLOCK for 64M bits SDRAM for debugging firmware. |
| 119 | VDD_1V8 | - | 1.8 V Power supply |
| 120 | PIXCLK | IN | Master 27MHz system clock input. |
| 121 | VSS | - | Ground |
| 122 | VDD_PLL | - | Clock PLL circuit 1.8 V Power supply |
| 123 | VSS_PLL | - | Clock PLL circuit Ground |
| 124 | XRESET | IN | Power ON system RESET signal.<br>'L': reset |
| 125 | SACD_IRQ | IN | Interrupt signal from SACD decoder |
| 126 | FP_XRDY | IN | Front Panel interface.<br>Hand-shake input. |
| 127 | FE_INT | IN | Interrupt input signal from Front-End L6316. |
| 128 | F_XWE, SD_DQML | OUT | Flash memory write enable.<br>Debug SDRAM/SRAM Lower DQM.<br>'L': enable, Lower select. |
| 129 | SD_DQMU | OUT | Debug SDRAM/SRAM Upper DQM<br>'L':upper select |
| 130 | SD_RXW | OUT | Debug SDRAM Read/Write<br>'L':write, 'H':read |
| 131 | CPU_WAIT | IN | CPU wait 'H' input |
| 132 | CE_FLASH | OUT | Flash memory Chip Enable 'L'. |
| 133 | CE_SACD | OUT | Licence signal from SACD decoder |
| 134 | CPU_CE1 | OUT | reserved |
| 135 | SD_XRAS | OUT | Debug SDRAM RAS 'L'<br>Debug SRAM chip enable 'L' |
| 136 | VDD_3V3 | - | 3.3 V Power supply |
| 137 | VSS | - | Ground |
| 138 | CPU_RAS1 | OUT | reserved |
| 139 | SD_XCAS | OUT | Debug SDRAM CAS 'L' |
| 140 | SD_XCS | OUT | Debug SDRAM Chip Select 'L' |
| 141 | CPU_D0 | I/O | FLASH, Debug SDRAM/SRAM data |
| 142 | CPU_D1 | | |
| 143 | CPU_D2 | | |
| 144 | CPU_D3 | | |
| 145 | CPU_D4 | | |
| 146 | CPU_D5 | | |
| 147 | CPU_D6 | | |
| 148 | CPU_D7 | | |
| 149 | VDD_1V8 | - | 1.8 V Power supply |
| 150 | VSS | - | Ground |
| 151 | CPU_D8 | I/O | FLASH, Debug SDRAM/SRAM data |
| 152 | CPU_D9 | | |
| 153 | CPU_D10 | | |
| 154 | CPU_D11 | | |
| 155 | CPU_D12 | | |
| 156 | CPU_D13 | | |
| 157 | CPU_D14 | | |
| 158 | CPU_D15 | | |
| 159 | VDD_3V3 | - | 3.3 V Power supply |
| 160 | VSS | - | Ground |

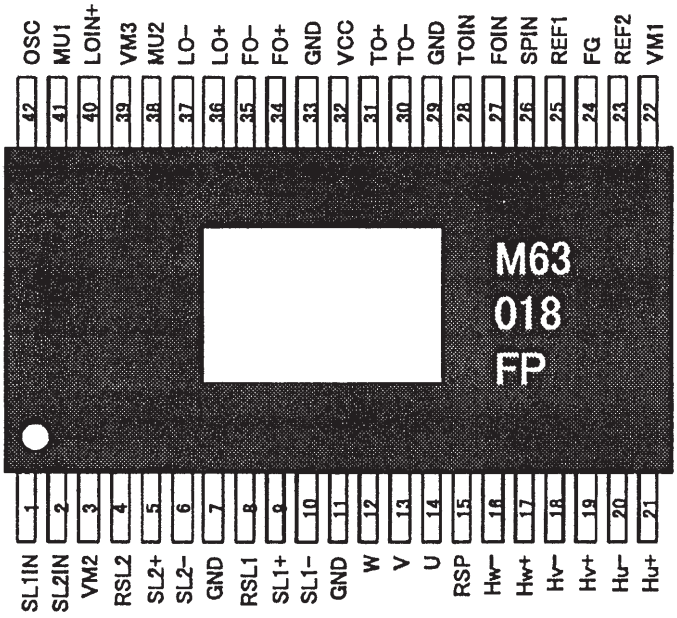
| No. | Pin Name | Dir. | Pin Function |
|---|---|---|---|
| 161 | CPU_A1 | OUT | FLASH, Debug SDRAM/SRAM Address |
| 162 | CPU_A2 | | |
| 163 | CPU_A3 | | |
| 164 | CPU_A4 | | |
| 165 | CPU_A5 | | |
| 166 | CPU_A6 | | |
| 167 | CPU_A7 | | |
| 168 | CPU_A8 | | |
| 169 | CPU_A9 | | |
| 170 | CPU_A10 | | |
| 171 | VDD_1V8 | - | 1.8 V Power supply |
| 172 | VSS | - | Ground |
| 173 | CPU_A11 | OUT | FLASH, Debug SDRAM/SRAM Address |
| 174 | CPU_A12 | | |
| 175 | CPU_A13 | | |
| 176 | CPU_A14 | | |
| 177 | CPU_A15 | | |
| 178 | CPU_A16 | | |
| 179 | CPU_A17 | | |
| 180 | CPU_A18 | | |
| 181 | CPU_A19 | | |
| 182 | CPU_A20 | | |
| 183 | CPU_A21 | | |
| 184 | VDD_3V3 | - | 3.3 V Power supply |
| 185 | VSS | - | Ground |
| 186 | XEXPE | OUT | reserved |
| 187 | FE_ERROR | IN | Front-End L6316 stream interface.<br>ECC Error flag |
| 188 | VSEL1 | OUT | EURO(SCART) connector (BLINKING) output signal<br>'L' : RGB output disable<br>'H' : RGB output enable |
| 189 | VSEL2 | OUT | EURO(SCART) connector V/Y, R/C signal.<br>'L' : VRGB output = YCGB<br>'H' : VRGB output = VRGB |
| 190 | FE_RST | OUT | Front-End L6316.<br>Hardware reset output.<br>'L' : reset |
| 191 | SACD_XRST | OUT | Reset signal of SACD decoder.<br>'L' : reset |
| 192 | XMMUTE | OUT | Output for tone quality enhancement |
| 193 | B_SYNC | OUT | Sector synchronization output to SACD decoder |
| 194 | SDA | I/O | Front-End L6316 command interface<br>I2C bus serial data line. |
| 195 | SCL | OUT | Front-End L6316 command interface<br>I2C bus serial clock line. |
| 196 | B_WCLK | OUT | Word clock output to SACD decoder |
| 197 | TXD | OUT | UART(RS-232C) data output |
| 198 | VDD_1V8 | | 1.8 V Power supply |
| 199 | VSS | - | Ground |
| 200 | RXD | IN | UART(RS-232C) data input |

| No. | Pin Name | Dir. | Pin Function |
|---|---|---|---|
| 201 | XAMUTE | OUT | Output signal for analog audio output line muting.<br>'L' : muting |
| 202 | TRIGIN | IN | Diagnostic Control Unit interface |
| 203 | TRIGOUT | OUT | Diagnostic Control Unit interface |
| 204 | DAC_XCS0 | OUT | Chip enable for audio DAC serial control.<br>'L' : enable |
| 205 | DAC_XCS1 | OUT | Use of serial control of 5.1ch audio DAC is possible.<br>'L' : enable |
| 206 | FP_ACK | OUT | Front Panel / DAC interface.<br>Hand-shake (acknowledge) output 'H'. |
| 207 | FP_SCK | OUT | Front Panel / DAC interface.<br>Serial transfer clock output. |
| 208 | FP_SI | IN | Front Panel interface.<br>Serial transfer data input. |

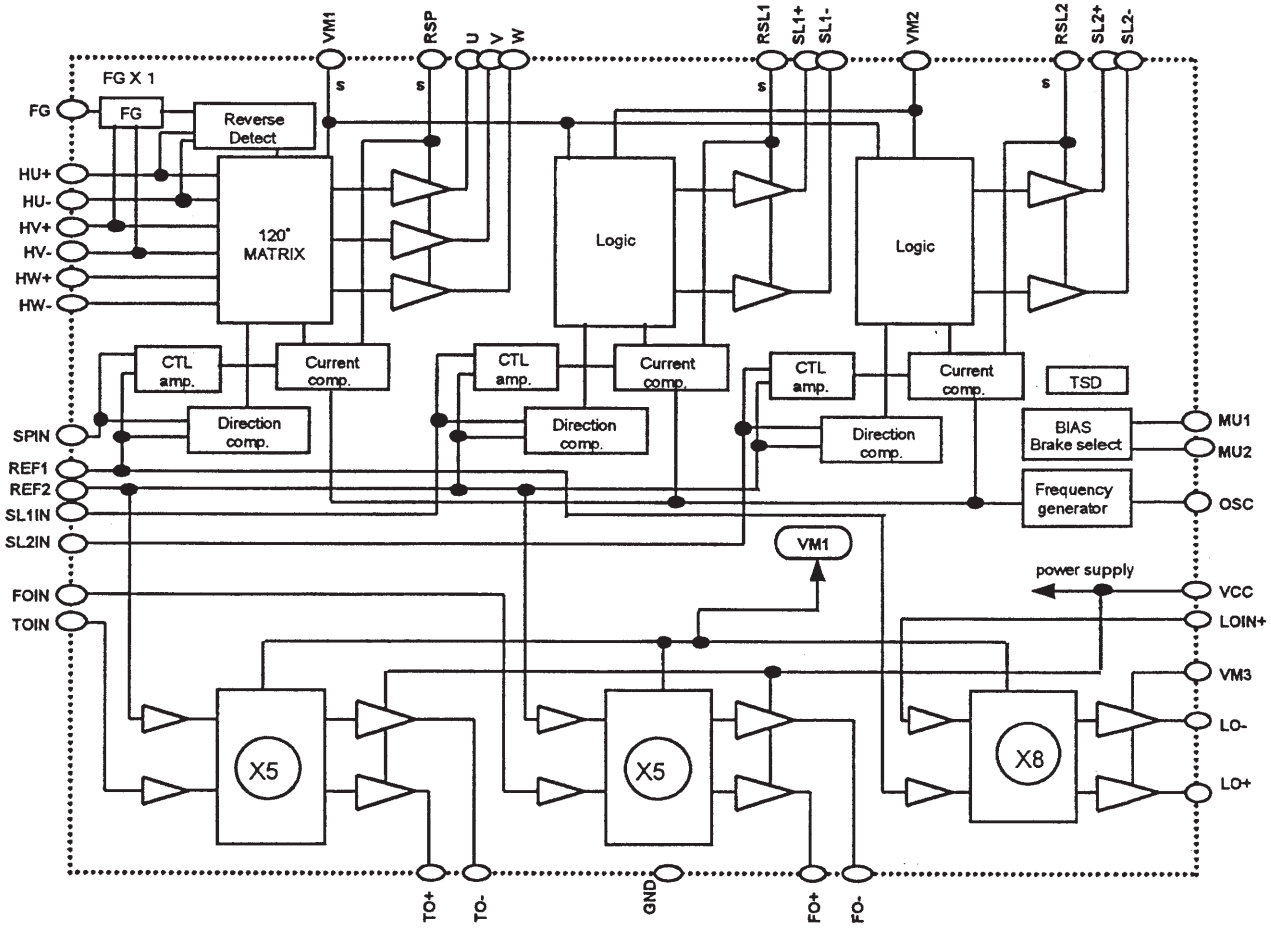
## ■ M63018FP (DVDM ASSY : IC101)

• FTS Driver IC

### ● Pin Arrangement




### ● Block Diagram



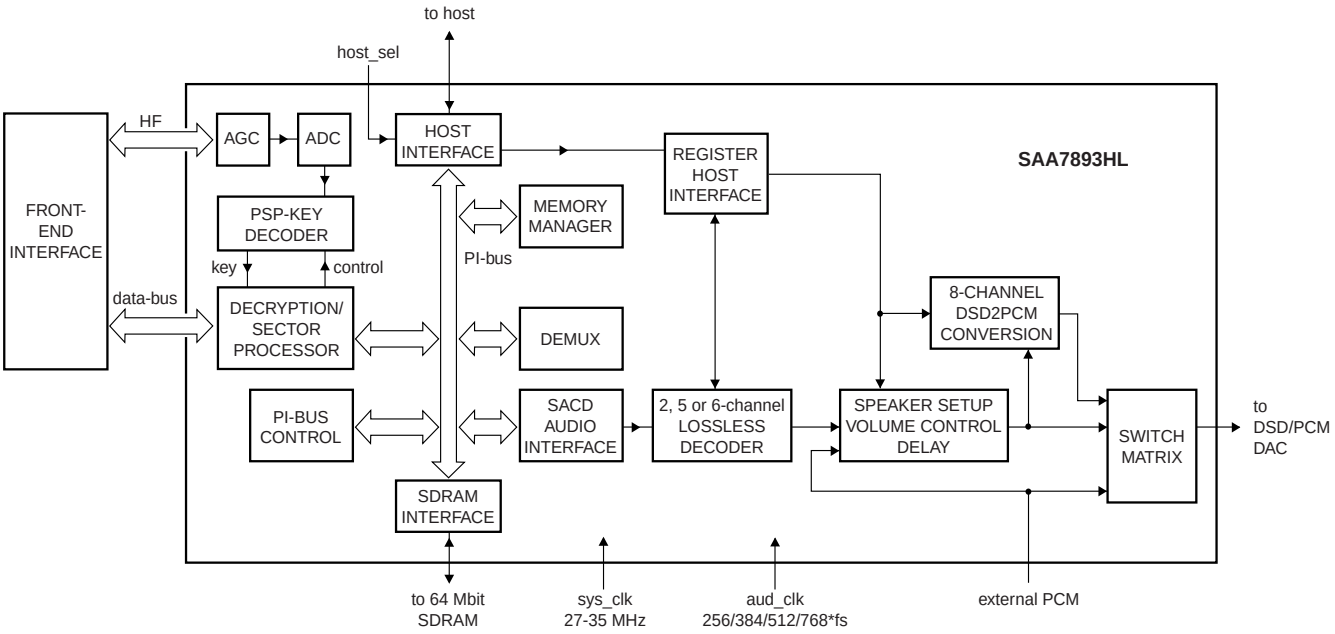
● **Pin Function**

| TERMINAL | SYMBOL | TERMINAL FUNCTION | TERMINAL | SYMBOL | TERMINAL FUNCTION |
|---|---|---|---|---|---|
| 1 | SL1IN | Slide control voltage input 1 | 42 | OSC | PWM carrier oscillation set |
| 2 | SL2IN | Slide control voltage input 2 | 41 | MU1 | mute / brake select terminal 1 |
| 3 | VM2 | Motor Power Supply 2 (for Slide) | 40 | LOIN+ | Loading control input(+) |
| 4 | RSL2 | Slide current sense 2 | 39 | VM3 | Power Supply3 (for Loading) |
| 5 | SL2+ | Slide non-inverted output 2 | 38 | MU2 | mute / brake select terminal 2 |
| 6 | SL2- | Slide inverted output 2 | 37 | LO- | Loading inverted output |
| 7 | GND | GND | 36 | LO+ | Loading non-inverted output |
| 8 | RSL1 | Slide current sense 1 | 35 | FO- | Focus inverted output |
| 9 | SL1+ | Slide non-inverted output 1 | 34 | FO+ | Focus non-inverted output |
| 10 | SL1- | Slide inverted output 1 | 33 | GND | GND |
| 11 | GND | GND | 32 | VCC | Power Supply (for FS ,TS) |
| 12 | W | Motor drive output W | 31 | TO+ | Tracking non-inverted output |
| 13 | V | Motor drive output V | 30 | TO- | Tracking inverted output |
| 14 | U | Motor drive output U | 29 | GND | GND |
| 15 | RSP | Spindle current sense | 28 | TOIN | Tracking control voltage input |
| 16 | HW- | HW- sensor amp. input | 27 | FOIN | Focus control voltage input |
| 17 | HW+ | HW+ sensor amp. input | 26 | SPIN | Spindle control voltage input |
| 18 | HV- | HV- sensor amp. input | 25 | REF1 | Reference voltage input 1 (for Spindle,Loading) |
| 19 | HV+ | HV+ sensor amp. input | 24 | FG | Frequency generator output |
| 20 | HU- | HU- sensor amp. input | 23 | REF2 | Reference voltage input 2 (for Slide,Focus,Tracking) |
| 21 | HU+ | HU+ sensor amp. input | 22 | VM1 | Motor Power Supply 1 (for Spindle) |

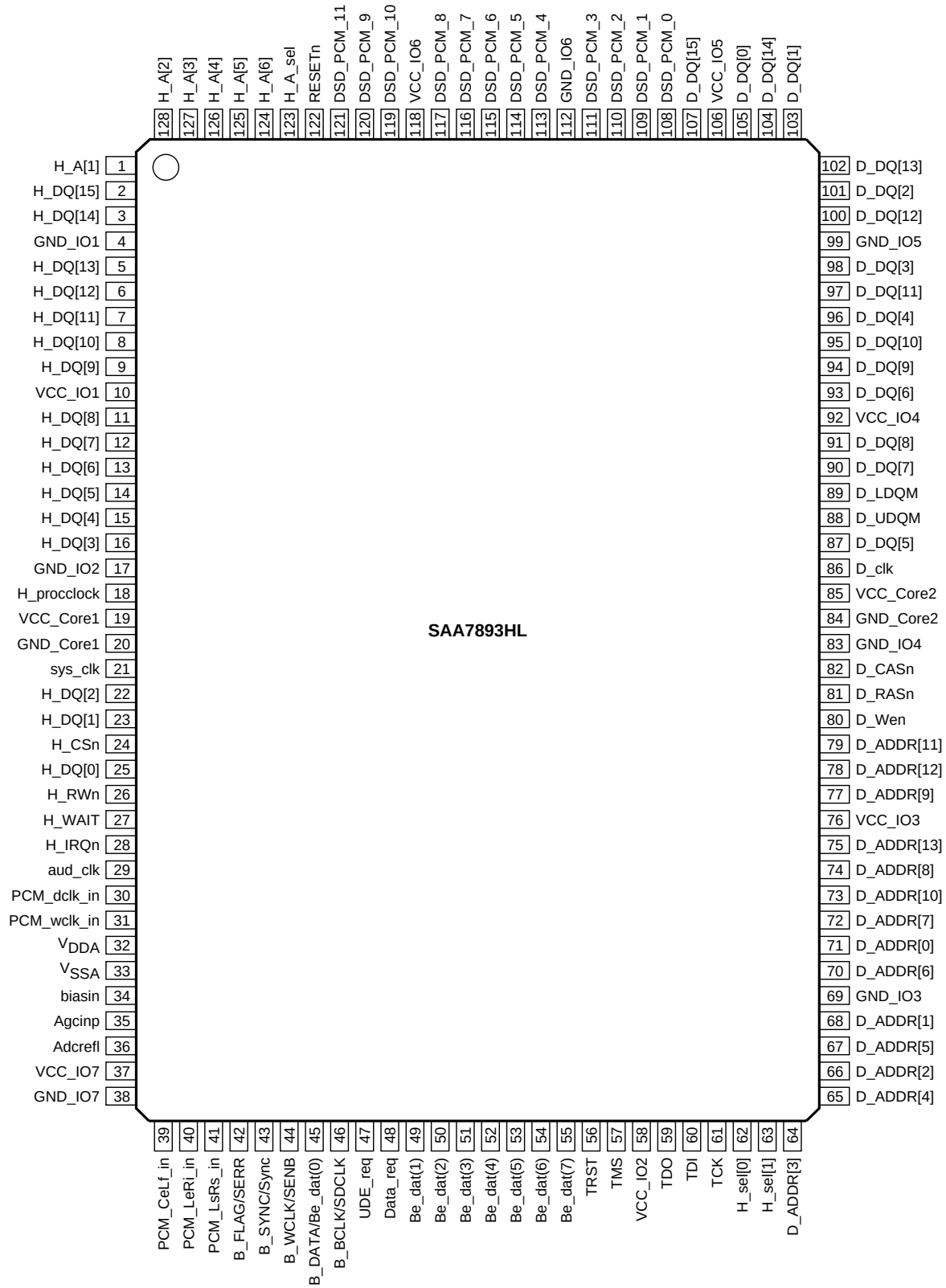
## ■ SAA7893HL/C2 (DVDM ASSY : IC801)

### • SACD Decoder IC

### ● Block Diagram



## ● Pin Layout


SAA7893HL
1 H_A[1]
2 H_DQ[15]
3 H_DQ[14]
4 GND_IO1
5 H_DQ[13]
6 H_DQ[12]
7 H_DQ[11]
8 H_DQ[10]
9 H_DQ[9]
10 VCC_IO1
11 H_DQ[8]
12 H_DQ[7]
13 H_DQ[6]
14 H_DQ[5]
15 H_DQ[4]
16 H_DQ[3]
17 GND_IO2
18 H_procclock
19 VCC_Core1
20 GND_Core1
21 sys_clk
22 H_DQ[2]
23 H_DQ[1]
24 H_CSn
25 H_DQ[0]
26 H_RWn
27 H_WAIT
28 H_IRQn
29 aud_clk
30 PCM_dclk_in
31 PCM_wclk_in
32 VDDA
33 VSSA
34 biasin
35 Agcinp
36 Adcrefl
37 VCC_IO7
38 GND_IO7
39 PCM_CeLf_in
40 PCM_LeRi_in
41 PCM_LsRs_in
42 B_FLAG/SERR
43 B_SYNC/Sync
44 B_WCLK/SENB
45 B_DATA/Be_dat(0)
46 B_BCLK/SDCLK
47 UDE_req
48 Data_req
49 Be_dat(1)
50 Be_dat(2)
51 Be_dat(3)
52 Be_dat(4)
53 Be_dat(5)
54 Be_dat(6)
55 Be_dat(7)
56 TRST
57 TMS
58 VCC_IO2
59 TDO
60 TDI
61 TCK
62 H_sel[0]
63 H_sel[1]
64 D_ADDR[3]
65 D_ADDR[4]
66 D_ADDR[2]
67 D_ADDR[5]
68 D_ADDR[1]
69 GND_IO3
70 D_ADDR[6]
71 D_ADDR[0]
72 D_ADDR[7]
73 D_ADDR[10]
74 D_ADDR[8]
75 D_ADDR[13]
76 VCC_IO3
77 D_ADDR[9]
78 D_ADDR[12]
79 D_ADDR[11]
80 D_Wen
81 D_RASn
82 D_CASn
83 GND_IO4
84 GND_Core2
85 VCC_Core2
86 D_clk
87 D_DQ[5]
88 D_UDQM
89 D_LDQM
90 D_DQ[7]
91 D_DQ[8]
92 VCC_IO4
93 D_DQ[6]
94 D_DQ[9]
95 D_DQ[10]
96 D_DQ[4]
97 D_DQ[11]
98 D_DQ[3]
99 GND_IO5
100 D_DQ[12]
101 D_DQ[2]
102 D_DQ[13]
103 D_DQ[1]
104 D_DQ[14]
105 D_DQ[0]
106 VCC_IO5
107 D_DQ[15]
108 DSD_PCM_0
109 DSD_PCM_1
110 DSD_PCM_2
111 DSD_PCM_3
112 GND_IO6
113 DSD_PCM_4
114 DSD_PCM_5
115 DSD_PCM_6
116 DSD_PCM_7
117 DSD_PCM_8
118 VCC_IO6
119 DSD_PCM_10
120 DSD_PCM_9
121 DSD_PCM_11
122 RESETn
123 H_A_sel
124 H_A[6]
125 H_A[5]
126 H_A[4]
127 H_A[3]
128 H_A[2]

## ● Pin Function

| Symbol | Pin | Type[1] | Description |
|---|---|---|---|
| H_A[1] | 1 | IN | address bus |
| H_DQ[15] | 2 | I/O10 | data bus |
| H_DQ[14] | 3 | I/O10 | data bus |
| GND_IO1 | 4 | GND_IO | GND I/O pads |
| H_DQ[13] | 5 | I/O10 | data bus |
| H_DQ[12] | 6 | I/O10 | data bus |
| H_DQ[11] | 7 | I/O10 | data bus |
| H_DQ[10] | 8 | I/O10 | data bus |
| H_DQ[9] | 9 | I/O10 | data bus |
| VCC_IO1 | 10 | VCC_IO | $V_{CC}$ I/O pads |
| H_DQ[8] | 11 | I/O10 | data bus |
| H_DQ[7] | 12 | I/O10 | data bus |
| H_DQ[6] | 13 | I/O10 | data bus |
| H_DQ[5] | 14 | I/O10 | data bus |
| H_DQ[4] | 15 | I/O10 | data bus |
| H_DQ[3] | 16 | I/O10 | data bus |
| GND_IO2 | 17 | GND_IO | GND I/O pads |
| H_procclock | 18 | IN | host processor EMI interface clock |
| VCC_Core1 | 19 | VCC_core | core supply voltage |
| GND_Core1 | 20 | GND_core | core ground |
| sys_clk | 21 | IN | system clock |
| H_DQ[2] | 22 | I/O10 | data bus |
| H_DQ[1] | 23 | I/O10 | data bus |
| H_CSn | 24 | IN | host chip select; active LOW |
| H_DQ[0] | 25 | I/O10 | data bus |
| H_RWn | 26 | IN | read = 1; write = 0 |
| H_WAIT | 27 | O10 | wait signal |
| H_IRQn | 28 | O10 | interrupt request; active LOW |
| aud_clk | 29 | IN | DSD audio clock |
| PCM_dclk_in | 30 | IN | PCM data clock |
| PCM_wclk_in | 31 | IN | PCM word clock |
| $V_{DDA}$ | 32 | VDDCO | $V_{DD}$ of ADC |
| $V_{SSA}$ | 33 | VSSCO | $V_{SS}$ of AGC and ADC; connected to substrate |
| biasin | 34 | APIO | bias current input |
| Agcinp | 35 | APIO | AGC positive input signal; HF in |
| Adcrefl | 36 | APIO | ADC decoupling |
| VCC_IO7 | 37 | VCC_IO | $V_{CC}$ I/O pads |
| GND_IO7 | 38 | GND_IO | GND I/O pads |
| PCM_CeLf_in | 39 | IN | PCM data center or LFE |

| Symbol | Pin | Type[1] | Description |
|---|---|---|---|
| PCM_LeRi_in | 40 | IN | PCM data left or right |
| PCM_LsRs_in | 41 | IN | PCM data left or right surround |
| B_FLAG/SERR | 42 | IN | $I^2S$-bus flag (EDC flag) |
| B_SYNC/Sync | 43 | IN | sector sync or absolute time sync |
| B_WCLK/SENB | 44 | IN | $I^2S$-bus word clock or UDE data sense from host |
| B_DATA/Be_dat(0) | 45 | IN | $I^2S$-bus data or LSB data of parallel interface |
| B_BCLK/SDCLK | 46 | IN | $I^2S$-bus bit clock |
| UDE_req | 47 | IN | host request data from front-end; routed via the SAA7893HL |
| Data_req | 48 | O10 | data request for UDE |
| Be_dat(1) | 49 | IN | front-end parallel data interface |
| Be_dat(2) | 50 | IN | front-end parallel data interface |
| Be_dat(3) | 51 | IN | front-end parallel data interface |
| Be_dat(4) | 52 | IN | front-end parallel data interface |
| Be_dat(5) | 53 | IN | front-end parallel data interface |
| Be_dat(6) | 54 | IN | front-end parallel data interface |
| Be_dat(7) | 55 | IN | front-end parallel data interface |
| TRST | 56 | IN1 | boundary scan reset |
| TMS | 57 | IN1 | boundary scan mode select |
| VCC_IO2 | 58 | VCC_IO | $V_{CC}$ I/O pads |
| TDO | 59 | O10 | output |
| TDI | 60 | IN1 | boundary scan data input |
| TCK | 61 | IN | boundary scan clock |
| H_sel[0] | 62 | IN | host select signals: SAD16, MAD16 and SAD08 |
| H_sel[1] | 63 | IN | host select signals: SAD16, MAD16 and SAD08 |
| D_ADDR[3] | 64 | O10 | SDRAM address bus |
| D_ADDR[4] | 65 | O10 | SDRAM address bus |
| D_ADDR[2] | 66 | O10 | SDRAM address bus |
| D_ADDR[5] | 67 | O10 | SDRAM address bus |
| D_ADDR[1] | 68 | O10 | SDRAM address bus |
| GND_IO3 | 69 | GND_IO | GND I/O pads |
| D_ADDR[6] | 70 | O10 | SDRAM address bus |
| D_ADDR[0] | 71 | O10 | SDRAM address bus |
| D_ADDR[7] | 72 | O10 | SDRAM address bus |
| D_ADDR[10] | 73 | O10 | SDRAM address bus |
| D_ADDR[8] | 74 | O10 | SDRAM address bus |
| D_ADDR[13] | 75 | O10 | SDRAM address bus |
| VCC_IO3 | 76 | VCC_IO | $V_{CC}$ I/O pads |
| D_ADDR[9] | 77 | O10 | SDRAM address bus |

| Symbol | Pin | Type[1] | Description |
|---|---|---|---|
| D_ADDR[12] | 78 | O10 | SDRAM address bus |
| D_ADDR[11] | 79 | O10 | SDRAM address bus |
| D_Wen | 80 | O10 | read or write |
| D_RASn | 81 | O10 | row address select; active LOW |
| D_CASn | 82 | O10 | column address select; active LOW |
| GND_IO4 | 83 | GND_IO | GND I/O pads |
| GND_Core2 | 84 | GND_core | core ground |
| VCC_Core2 | 85 | VCC_core | core supply voltage |
| D_clk | 86 | O10 | clock signal needed for SDRAM |
| D_DQ[5] | 87 | I/O10 | data bus |
| D_UDQM | 88 | O10 | DQ mask enable (upper) |
| D_LDQM | 89 | O10 | DQ mask enable (lower) |
| D_DQ[7] | 90 | I/O10 | data bus |
| D_DQ[8] | 91 | I/O10 | data bus |
| VCC_IO4 | 92 | VCC_IO | $V_{CC}$ I/O pads |
| D_DQ[6] | 93 | I/O10 | data bus |
| D_DQ[9] | 94 | I/O10 | data bus |
| D_DQ[10] | 95 | I/O10 | data bus |
| D_DQ[4] | 96 | I/O10 | data bus |
| D_DQ[11] | 97 | I/O10 | data bus |
| D_DQ[3] | 98 | I/O10 | data bus |
| GND_IO5 | 99 | GND_IO | GND I/O pads |
| D_DQ[12] | 100 | I/O10 | data bus |
| D_DQ[2] | 101 | I/O10 | data bus |
| D_DQ[13] | 102 | I/O10 | data bus |
| D_DQ[1] | 103 | I/O10 | data bus |
| D_DQ[14] | 104 | I/O10 | data bus |
| D_DQ[0] | 105 | I/O10 | data bus |
| VCC_IO5 | 106 | VCC_IO | $V_{CC}$ I/O pads |
| D_DQ[15] | 107 | I/O10 | data bus |
| DSD_PCM_0 | 108 | O10 | 6-channel data output |
| DSD_PCM_1 | 109 | O10 | 6-channel data output |
| DSD_PCM_2 | 110 | O10 | 6-channel data output |
| DSD_PCM_3 | 111 | O10 | 6-channel data output |
| GND_IO6 | 112 | GND_IO | GND I/O pads |
| DSD_PCM_4 | 113 | O10 | 6-channel data output |
| DSD_PCM_5 | 114 | O10 | 6-channel data output |
| DSD_PCM_6 | 115 | O10 | 6-channel clock/control |
| DSD_PCM_7 | 116 | O10 | 6-channel clock/control |
| DSD_PCM_8 | 117 | O10 | 2-channel clock/control |
| VCC_IO6 | 118 | VCC_IO | $V_{CC}$ I/O pads |

| Symbol | Pin | Type[1] | Description |
|---|---|---|---|
| DSD_PCM_10 | 119 | O10 | 2-channel data output |
| DSD_PCM_9 | 120 | O10 | 2-channel clock or control |
| DSD_PCM_11 | 121 | O10 | 2-channel data output |
| RESETn | 122 | IN | asynchronous reset; active LOW |
| H_A_sel | 123 | IN | address select |
| H_A[6] | 124 | IN | address bus |
| H_A[5] | 125 | IN | address bus |
| H_A[4] | 126 | IN | address bus |
| H_A[3] | 127 | IN | address bus |
| H_A[2] | 128 | IN | address bus |

[1] Explanation of input and output ports:
IN: digital input port; all dedicated inputs are TTL tolerant.
IN1: digital input port with internal pull-up resistor.
I/O10: bidirectional port with 10 ns slew rate.
O10: 3-state (in test mode) output port with 10 ns slew rate.
APIO: analog input port.
VDDCO: analog $V_{DD}$ port (1.8 V).
VSSCO: analog $V_{SS}$ port.
GND_IO: ground for I/O pads.
VCC_IO: $V_{CC}$ for I/O pads (3.3 V).
GND_core: ground for core.
VCC_core: $V_{CC}$ for core (1.8 V).

## ■ PDC110B (CONTROL ASSY : IC5501)

• System Control Microcomputer

### ● Pin Functions

| No. | Mark | Pin Name | I/O | Function |
|---|---|---|---|---|
| 1 | PA3/WR# | DVDON/OFF | O | Control power supply for DVD module |
| 2 | PA4/RD# | HPDET | I | Detect to insert headphone |
| 3 | PA5/RS | NC | O | NC |
| 4 | P70 / INT0 / T0LCP / AN8 | ACPULSE | I | AC PULSE input (Interruption) |
| 5 | P71 / INT1 / T0HCP / AN9 | NC | O | NC |
| 6 | P72 / INT2 / T0IN | RDSCLK | I (O) | Clock input from RDS decoder (without RDS : Low output) |
| 7 | P73 / INT3 / T0IN | REMOCON | I | REMOCON signal input (Interruption) |
| 8 | RES# | XRESET | I | μ-com reset input |
| 9 | XT1 / AN10 | XT1 | – | (When this port don't use , please connect VDD) |
| 10 | XT2 / AN11 | XT2 | – | (When this port don't use , please set open) |
| 11 | VSS1 | VSS1 | – | GND |
| 12 | CF1 | CF1 | – | for OSC |
| 13 | CF2 | CF2 | – | for OSC |
| 14 | VDD1 | VDD1 | – | VDD |
| 15 | P80 / AN0 | SIMUKE | I | Destination distinction input |
| 16 | P81 / AN1 | MODEL | I | model distinction input |
| 17 | P82 / AN2 | VDET | I | DVD 3.3V detection input |
| 18 | P83 / AN3 | KEY1 | I | Key1 input |
| 19 | P84 / AN4 | NC | O | NC |
| 20 | P85 / AN5 | NC | O | NC |
| 21 | P86 / AN6 | ST/TUNE | I | STEREO tuned detection input |
| 22 | P87 / AN7 | XPROTECT | I | Protection and Fan Error detection input |
| 23 | P10/SO0 | SDATA | O | System bus data output (AMP side output) |
| 24 | P11 / SI0 / SB0 | MDATA | I | System bus data input (AMP side input) |
| 25 | P12 / SCK0 | SCLK | I | System bus clock input |
| 26 | P13 / SO1 | DSPDI | O | Data output to DSP (MOTOROLA) and DIR |
| 27 | P14 / SI1 / SB1 | DSPDO | I | Data input from DSP (MOTOROLA) |
| 28 | P15 / SCK1 | DSPCK | O | Clock output to DSP (MOTOROLA) and DIR |
| 29 | P16/T1PWML | SYSCS2 | O | Chip select 2 for system bus |
| 30 | P17/T1PWMH/BUZ | SYSCS1 | O | Chip select 1 for system bus |
| 31 | PE0 | XHPMUTE | O | HP MUTE ON/OFF |
| 32 | PE1 | XRECMUTE | O | REC OUTPUT MUTE ON/OFF |
| 33 | PE2 | NC | O | NC |
| 34 | PE3 | NC | O | NC |
| 35 | PE4 | NC | O | NC |
| 36 | PE5 | NC | O | NC |
| 37 | PE6 | TIMERLED | O | Control TIMER LED |
| 38 | PE7 | (LEVELSHIFT) | O | VOL 0 to 5 : H (standby) |
| 39 | VSS4 | VSS4 | – | GND |
| 40 | VDD4 | VDD4 | – | VDD |

| No. | Mark | Pin Name | I/O | Function |
|---|---|---|---|---|
| 41 | PF0 | ATT10dB | O | Control ATT 10dB |
| 42 | PF1 | ATT6dB | O | Control ATT 6dB |
| 43 | PF2 | STEST | I | Set SERVICE TEST MODE for Service |
| 44 | PF3 | UTEST | I | Set UNIT CHECK for checker |
| 45 | PF4 | DTSDMIX | O | Cntrol of gain-up for dts down-mix |
| 46 | PF5 | SWFMIX | O | Control for subwoofer mix |
| 47 | PF6 | DIMSEL1 | O | DIMMER SELECT1 |
| 48 | PF7 | DIMSEL2 | O | DIMMER SELECT2 |
| 49 | SI2P0/SO2 | LCDDAT | O | Data for LCD driver |
| 50 | SI2P1/SI2/SB2 | LCDCS | O | Chip enable for LCD driver |
| 51 | SI2P2/SCK2 | LCDCLK | O | Clock for LCD driver |
| 52 | SI2P3/SCK20 | (XLCDRST) | O | Reset for LCD driver (standby) |
| 53 | PWM1 | NC | | NC |
| 54 | PWM0 | NC | | NC |
| 55 | VDD2 | VDD2 | – | VDD |
| 56 | VSS2 | VSS2 | – | GND |
| 57 | P00 | TXCE | O | Chip enable for tuner LSI |
| 58 | P01 | NC | O | NC |
| 59 | P02 | DIGSEL | O | SW for Digital 1/2 select |
| 60 | P03 | WVOLCE | O | Chip enable for woreless-vol IC |
| 61 | P04 | TXCLK | O | Clock for tuner LSI |
| 62 | P05 | TXODATA | O | Data for tuner LSI |
| 63 | P06 | TXMUTE | O | Control mute of tuner |
| 64 | P07 | RDSPOW | O | Control power supply of RDS (L : POWER ON) |
| 65 | P20/INT4/T1IN | RDSDATA | I (O) | Input RDS data |
| 66 | P21/INT4/T1IN | TXIDATA | I | Input data from tuner LSI |
| 67 | P22/INT4/T1IN | DVDACK | I | Ackknowlegement from DVD MODULE (Interruption) |
| 68 | P23/INT4/T1IN | XVMUTE | O | VIDEO MUTE request to DVD MODULE |
| 69 | P24/INT5/T1IN | DVDMUTE | I | Request of MUTE from DVD MODULE (Interruption) |
| 70 | P25/INT5/T1IN | AUDIOSELA | O | SW for Audio in DVD-A and SA-CD |
| 71 | P26/INT5/T1IN | INPUTSELC | O | AUDIO INPUT SELECT C (or TV AUDIO INPUT SELECT) |
| 72 | P27/INT5/T1IN | XWMUTE | O | WIRE LESS MUTE request |
| 73 | P30 | WSELA | O | WIRE LESS OUTPUT SELECT A |
| 74 | P31 | INPUTSELB | O | AUDIO INPUT SELECT B |
| 75 | P32 | INPUTSELA | O | AUDIO INPUT SELECT A |
| 76 | P33 | XTL0 | O | Selection X'tal to DIR |
| 77 | P34 | DIRERR | I | LOCK/UNLOCK from DIR |
| 78 | P35 | DIRRST | O | Reset to DIR |
| 79 | P36 | DIRCS | O | Chip select to DIR |
| 80 | PB7/D7 | DIRDO | I | Data input from DIR |

| No. | Mark | Pin Name | I/O | Function |
|---|---|---|---|---|
| 81 | PB6/D6 | DSPMODE | O | MODE selection (ROM/RAM) to DSP (MOTOROLA) |
| 82 | PB5/D5 | DSPHREQ | I | Error detection from DSP (MOTOROLA) |
| 83 | PB4/D4 | HPVOLCE | O | Chip enable for HP-vol IC |
| 84 | PB3/D3 | DSPSS | O | Slave selection to DSP (MOTOROLA) |
| 85 | PB2/D2 | XDSPRST | O | RESET to DSP (MOTOROLA) MODULE |
| 86 | PB1/D1 | DECMUTE | I | Detection of 1st DSP boot success from DSP MODULE |
| 87 | PB0/D0 | XDSPMUTE | O | MUTE requeat to DSP MODULE |
| 88 | VSS3 | VSS3 | – | GND |
| 89 | VDD3 | VDD3 | – | VDD |
| 90 | PC7/A7 | DVDA6dBATT | O | ATTENUATION(6dB) operating Bass/Treble at DVD-AUDIO |
| 91 | PC6/A6 | SYSPOW | O | Control power supply of system |
| 92 | PC5/A5 | XTVMUTE | O | Control muting of TV (EURO) |
| 93 | PC4/A4 | XDVDRST | O | RESET to DVD MODULE |
| 94 | PC3/A3 | XSYSMUTE | O | Control mute of system |
| 95 | PC2/A2 | VOLCE | O | Chip enable for E-vol IC |
| 96 | PC1/A1 | VOLCLK | O | Clock for E-vol IC / HP-vol IC / Wireless-vol IC |
| 97 | PC0/A0 | VOLDATA | O | Data for E-vol IC / HP-vol IC / Wireless-vol IC |
| 98 | PA0/CS2# | FLASHE/D | – | for FLASH writing |
| 99 | PA1/CS1# | FLASHDO | – | for FLASH writing |
| 100 | PA2/CS0# | FLASHCLK | – | for FLASH writing |

- Port0 (P00-P07) can be selected for input or output by each 4 bits (P00-P03,P04-P07). Set for input when reset. And it can be set C-MOS or Nch-OD by each 1 bit in option.
- Port1 (P10-P17) can be selected for input or output by each 1 bit. Set for input when reset. And it can be set C-MOS or Nch-OD by each 1bit in option.
- Port2 (P20-P27) can be selected for input or output by each 1 bit. Set for input when reset. And it can be set C-MOS or Nch-OD by each 1 bit in option.
- Port3 (P30-P36) can be selected for input or output by each 1 bit. Set for input when reset. And it can be set C-MOS or Nch-OD by each 1 bit in option.
- Port7 (P70-P73) can be selected for input or output by each 1 bit. Set for input when reset.
- Port8 (P80-P87) can be selected for input or output by each 1 bit. Set for input when reset.
- PortA (PA0-PA5) can be selected for input or output by each 1 bit. Set for input when reset. And it can be set C-MOS or Nch-OD by each 1 bit in option.
- PortB (PB0-PB7) can be selected for input or output by each 1 bit. Set for input when reset. And it can be set C-MOS or Nch-OD by each 1 bit in option.
- PortC (PC0-PC7) can be selected for input or output by each 1 bit. Set for input when reset. And it can be set C-MOS or Nch-OD by each 1 bit in option.
- PortE and PortF can be selected for input or output by each 2 bits.

## 7.3 DISC/CONTENT FORMAT

# Disc / content format playback compatibility

### General disc compatibility

This player was designed and engineered to be compatible with software bearing one or more of the following logos:

DVD-Audio DVD-Video DVD-R DVD-RW

COMPACT disc DIGITAL AUDIO
COMPACT disc DIGITAL VIDEO
COMPACT disc DIGITAL AUDIO Recordable
COMPACT disc DIGITAL AUDIO ReWritable

Audio CD Video CD CD-R CD-RW

Super Audio CD

Fujicolor CD

- KODAK Picture CD
- *is a trademark of Fuji Photo Film Co. Ltd.*

Other formats, including but not limited to the following, are not playable in this player:

**DVD-RAM / DVD-ROM / CD-ROM***

* *Except those that contain MP3 or JPEG. See also "Compressed audio compatibility" and "JPEG file compatibility" below.*

DVD-R/RW and CD-R/RW discs (Audio CDs and Video CD/Super VCDs) recorded using a DVD recorder, CD recorder or personal computer may not be playable on this unit. This may be caused by a number of possibilities, including but not limited to: the type of disc used; the type of recording; damage, dirt or condensation on either the disc or the player's pick-up lens. See below for notes about particular software and formats.

### CD-R/RW compatibility

- This unit will play CD-R and CD-RW discs recorded in CD Audio or Video CD/Super VCD format, or as a CD-ROM containing MP3 or JPEG files. However, any other content may cause the disc not to play, or create noise/distortion in the output.
- This unit cannot record CD-R or CD-RW discs.
- Unfinalized CD-R/RW discs recorded as CD Audio can be played, but the full Table of Contents (playing time, etc.) will not be displayed.

### DVD-R/RW compatibility

- This unit will play DVD-R/RW discs recorded using the DVD-Video format that have been finalized using a DVD-recorder.
- This unit will play DVD-RW discs recorded using the Video Recording (VR) format.
- **DVD-RW** shows in the display when a VR format DVD-RW disc is loading.
- When playing a VR format DVD-RW discs that was edited on a DVD recorder, the screen may go momentarily black at edited points and/or you may see scenes from immediately before the edited point.
- This unit cannot record DVD-R/RW discs.
- Unfinalized DVD-R/RW discs cannot be played in this player.

## PC-created disc compatibility

- If you record a disc using a personal computer, even if it is recorded in a "compatible format" as listed above, there will be cases in which the disc may not be playable in this machine due to the setting of the application software used to create the disc. In these particular instances, check with the software publisher for more detailed information.
- Check the DVD-R/RW or CD-R/RW software disc boxes for additional compatibility information.

## Compressed audio compatibility

- This unit will play CD-ROM, CD-R, and CD-RW discs containing files saved in the MPEG-1 Audio Layer 3 (MP3) format with a sampling rate of 32, 44.1 or 48kHz. Incompatible files will not play and the message **Can't play this format** will be displayed (**NO PLAY** in the front panel display).
- Fixed bit-rate MP3 files are recommended. Variable bit-rate (VBR) MP3 files are playable, but playing time may not be shown correctly..
- The CD-ROM used to compile your MP3 files must be ISO 9660 Level 1 or 2 compliant. CD physical format: Mode1, Mode2 XA Form1. Romeo and Joliet file systems are both compatible with this player.
- Use CD-R or CD-RW media for recording your files. The disc must be finalized (i.e. the session must be closed) in order to play in this unit. This player is not compatible with multi-session discs. Only the first session of a multi-session disc will be recognized.
- This player only plays tracks that are named with the file extension .mp3 or .MP3.
- When naming MP3 files, add the corresponding file name extension (.mp3). Files are played according to the file extension. To prevent noise and malfunctions, do not use these extensions for other kinds of files.
- This player can recognize up to 999 files (MP3/JPEG) and up to 499 folders. If a disc exceeds these limits, only files and folders up to these limits will be playable. Files and folders are read/displayed in alphabetical order. Note that if the file structure is very complex, you may not be able to read/play all files on the disc.
- Folder and track names (excluding the file extension) are displayed.
- There are many different recording bit-rates available to encode MP3 files. This unit was designed to be compatible with all of them. Audio encoded at 128Kbps should sound close to regular CD Audio quality. This player will play lower bit-rate files, but please note that the sound quality becomes noticeably worse at lower bit-rates.

## JPEG file compatibility

- Baseline JPEG and EXIF 2.1* still image files up to 8 mega-pixels are supported (maximum vertical and horizontal resolution is 5120 pixels). (**File format used by digital still cameras*)
- The CD-ROM used to compile your JPEG files must be ISO 9660 Level 1 or 2 compliant. CD physical format: Mode1, Mode2 XA Form1. Romeo and Joliet file systems are both compatible with this player.
- This player only displays files that are named with the file extension .jpg or .JPG.

# 7.4 CLEANING

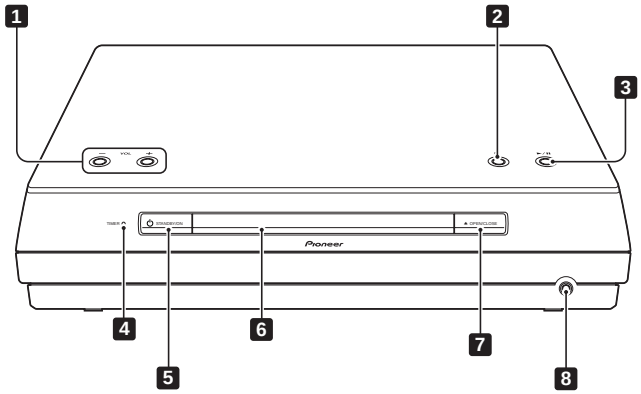
Before shipping out the product, be sure to clean the following positions by using the prescribed cleaning tools:

| Position to be cleaned | Cleaning tools |
|---|---|
| Pickup lenses | Cleaning liquid : GEM1004<br>Cleaning paper : GED-008 |

| Position to be cleaned | Cleaning tools |
|---|---|
| Fans | Cleaning paper : GED-008 |

# 8. PANEL FACILITIES
## 8.1 PANEL FACILITIES

### Front panel




**1 VOLUME buttons**
Use to adjust the volume.

**2 ■**
Press to stop playback.

**3 ▶/II**
Press to switch to the **DVD/CD** function. Also press to start/pause/resume playback.

**4 Timer indicator**
Lights when the wake-up timeris set.

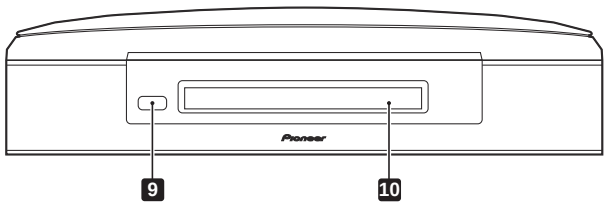
**5 ⏻ STANDBY/ON**
Press to switch the system on or into standby.

**6 Disc tray**

**7 ⏏ OPEN/CLOSE**
Press to open/close the disc tray.

**8 PHONES jack**
Headphone jack.

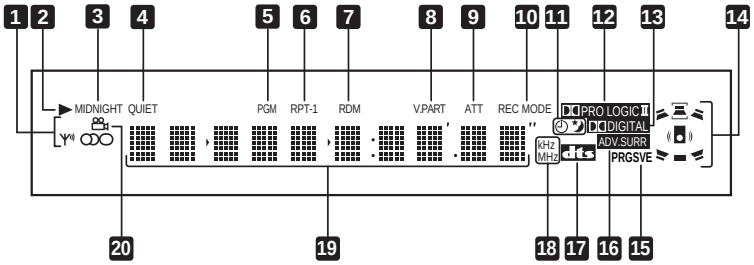
### Display unit




**9 Remote sensor**

**10 Display**
See Display on next page for detailed information.

## Display




**1 Tuner indicators**

Lights when in one of the RDS display or search modes.

Lights when a broadcast is being received.

Lights when a stereo FM broadcast is being received in auto stereo mode.

Lights when FM mono reception is selected.

**2 ►**
Lights when a disc is playing.

**3 MIDNIGHT**
Lights when the Midnight mode is selected.

**4 QUIET**
Lights when the Quiet mode is selected**.**

**5 PGM**
Lights when a program list has been programmed.

**6 RPT and RPT-1**
**RPT**lights during repeat play. **RPT-1**lights during repeat one-track play.

**7 RDM**
Lights during random play.

**8 V.PART**
Light when playing a video part of a DVD disc.

**9 ATT**
Lights when the input attenuator is active for the currently selected analog input.

**10 REC MODE**
Lights when Rec Mode is active.

**11 Timer indicators**

Lights when the wake-up timer is set.

Lights when the sleep timer is active.

**12 PRO LOGIC II**
Lights during Dolby Pro Logic decoding.

**13 DIGITAL**
Lights during playback of a Dolby Digital source.

**14 Speaker indicators**
These show which speakers are being used to output the current source. The illustrations below show some example displays.

5.1 channel surround sound

Stereo (2.1 channel) sound

3.1 channel sound with Dialogue enhancement on the center channel

5.1 channel surround sound with Virtual Surround Back mode active

**15 PRGSVE**
Lights when progressive scan video output is selected.

**16 ADV.SURR.**
Lights when one of the Advanced Surround listening modes is selected.

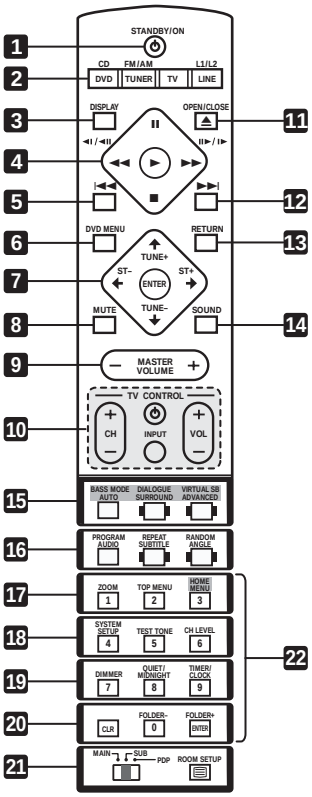
**17 DTS**
Lights during playback of a DTS source.

**18 kHz / MHz**
Indicates the unit of the frequency shown in the character display (**kHz** for AM, **MHz** for FM).

**19 Character display**

**20**
Lights during multi-angle scenes on a DVD disc.

## Remote control




**Important**

- Functions printed in green on the remote control are accessed by switching the **MAIN**/**SUB**/**PDP** switch to **SUB**.

**1 ⏻ STANDBY/ON**
Press to switch the system on or into standby.

**2 Function select buttons**
Press to select the source you want to listen to (**DVD (CD)**. **TUNER**,**TV**, **LINE**)

**3 DISPLAY**
Press to display/change disc information shown on-screen.

**4 Disc playback controls**

**►**
Press to start or resume playback.

**◄◄ and ◄I /◄II**
Use for reverse slow motion playback, frame reverse and reverse scanning.

**►► and II►/ I►**
Use for forward slow motion playback, frame advance and forward scanning.

**II**
Press to pause playback; press again to restart.

**■**
Press to stop playback.

**5 I◄◄**
Press to jump to the beginning of the current chapter/track, then to previous chapters/ tracks.

**6 DVD MENU**
Press to display a DVD disc menu, or the Disc Navigator if a VR format DVD-RW, CD, Video CD, MP3 or JPEG disc is loaded.

**7 Cursor buttons, ENTER and tuning buttons**

**Cursor buttons**
Use the cursor buttons (↑ / ↓ / ← / →) to navigate on-screen displays and menus.

**ENTER**
Press to select an option or execute a command.

**TUNE +/–**
Use to tune the radio.

**ST +/–**
Use to select station presets when listening to the radio.

**8 MUTE**

Press to mute all sound from the speakers and headphones (press again to cancel).

**9 MASTER VOLUME**

Use to adjust the volume.

**10 TV CONTROL**

⏻

Press to switch the TV on or into standby.

**INPUT**

Press to switch the TV input.

**P +/–**

Use to select channels on the TV.

**VOL +/–**

Use to adjust the volume on the TV.

**11 ⏏ OPEN/CLOSE**

Press to open/close the disc tray.

**12 ►►|**

Press to jump to the next chapter/track.

**13 RETURN**

Press to return to a previous menu screen.

**14 SOUND**

Press to access the sound menu, from which you can adjust the DSP effect level, bass and treble, etc.

**15 Surround sound mode/sound enhancement buttons**

**(In MAIN)**

**AUTO**

Press to select the default decoding for the current source.

**SURROUND**

Use to select a Surround mode.

**ADVANCED**

Use to select an Advanced Surround.

**(In SUB)**

**BASS MODE**

Use to select a Bass Mode.

**DIALOGUE**

Use to select a Dialogue mode.

**VIRTUAL SB**

Press to switch the Virtual Surround Back speaker effect on/off.

**16 DVD/CD buttons**

**(In MAIN)**

**AUDIO**

Press to select an audio channel or language.

**SUBTITLE**

Press to display/change the DVD subtitle display.

**ANGLE**

Press to change camera angle during DVD multi-angle scene playback.

**(In SUB)**

**PROGRAM**

Use to program/play a program list.

**REPEAT**

Use to select a repeat play mode.

**RANDOM**

Use to select a random play mode.

**17 (In SUB)**

**ZOOM**

Press to change the screen zoom level.

**TOP MENU**

Use to display the top menu of a DVD disc in the play position (this may be the same as pressing **DVD MENU**).

**HOME MENU**
Press to display (or exit) the on-screen menu for Initial Settings, Play Mode functions, etc.

**18 (In SUB)**

**SYSTEM SETUP**
Use to make various system and surround sound settings.

**TEST TONE**
Use to output the test tone (for speaker setup).

**CH LEVEL**
Use to adjust the speaker level.

**19 (In SUB)**

**DIMMER**
Press to dim or brighten the display.

**QUIET/MIDNIGHT**
Use to select the Quiet and Midnight modes.

**TIMER/CLOCK**
Press to display the clock and to access the timer menu.

**20 (In MAIN)**

**CLR**
Press to clear an entry.

**ENTER**
Selects menu options, etc. (works exactly the same as the **ENTER** button in **7** above).

**(In SUB)**

**FOLDER –**
Press to jump to previous folders.

**FOLDER +**
Press to jump to the next folder.

**21 MAIN / SUB / PDP**
Change from **MAIN** to **SUB** to access functions printed in green. Switch to **PDP** to be able to use teletext with Pioneer plasma displays (see Teletext on/off below)

**(In MAIN)**

**ROOM SETUP**
Press to start Room Setup.

**(In PDP)**

**(Teletext on/off)**
Press to display/hide the teletext screen. (Use the number buttons and the blue, green, yellow and red buttons to navigate teletext screens when using with a Pioneer plasma display.)

**22 (In MAIN)**

**Number buttons**
Use the number buttons for selecting titles/chapters/tracks from a disc directly.